

Field Survey of Contaminant Concentrations in Existing Wetlands in the San Francisco Bay Area

C. R. Lee, D. L. Brandon, J. W. Simmers, H. E. Tatem R. A. Price, and S. P. Miner

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SUMMARY

There is an increased public awareness of the importance of wetlands and a heightened interest in restoration and creation of wetlands using dredged material. Dredged material is being tested for potential use in wetland creation and restoration projects. In order to evaluate the acceptability of wetland creation and restoration with dredged material, establishment of some form of reference wetland baseline from which to make informed evaluations is often necessary. Test data must be interpreted in relationship to realistic circumstances. The reference baseline is usually chosen from the particular location where wetlands will be created or restored.

The objective of this study was to determine the concentrations of contaminants in sediments, plants and animals in existing wetlands near proposed wetland creation sites and to establish a reference wetland baseline for the San Francisco Bay area. The data collected would become an initial wetland baseline that can be used to interpret and put perspective on results of wetland testing of dredged material from the San Francisco Bay area.

Thirteen naturally occurring wetlands were sampled in marine, estuarine and freshwater locations along San Francisco and Suisun Bays and in the Sacramento River Basin. Wetland sediment, plant and animal samples were collected and transported to the U.S. Army Engineer Waterways Experiment Station (WES) for processing and analysis. Samples were analyzed for metals, butyltins, petroleum aromatic hydrocarbons, pesticides and polychlorinated biphenyls.

The naturally-occurring wetlands in the San Francisco Bay area and the adjacent estuarine and freshwater areas contained relatively low levels of most metal, PCBs, PAHs, butyltin, and pesticide contaminants in soil/sediment, plants, and animals. Metals such as lead, chromium and arsenic appeared to have elevated concentrations in some plants and animals. There was a very depauperate faunal component in all the naturally-occurring wetlands surveyed, that may be the result of a more subtle impact. This survey was conducted toward the end of a five year drought in the region. This climatic condition no doubt influenced the existing fauna available for sampling.

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PREFACE

This report presents the results of a field survey of existing wetlands in the San Francisco Bay area performed for Messrs. Brian Walls, Duke Roberts, Mark Dettle and Tom Kendall, project managers at the San Francisco District of the US Army Corps of Engineers. The study was conducted by the US Army Engineer Waterways Experiment Station (WES) during the period July 1990 through September 1991.

Work was performed by Dr. Charles R. Lee, Soil Scientist; Dr. Henry E. Tatem, Zoologist; Dr. John W. Simmers, Research Biologist; Mr. Richard A. Price, Research Agronomist; Mr. Dennis L. Brandon, Statistician; Contaminant Mobility and Regulatory Criteria Group (CMRCG), Environmental Processes and Effects Division (EPED), Environmental Laboratory (EL); and Mr. Scott P. Miner, Ecologist, San Francisco District, U.S. Army Corps of Engineers (SPN).

Animal bioassessment acknowledges Mr. Lawrence Bird (ASCI Corporation), and Ms. Heather Holifield, Mr. Michael Pendarvis, and Mr. Johnny McGuffie (University Contract Students) for conducting the laboratory portion of this study. Plant bioassessment acknowledges Ms. Erika Seals and Ms. Elizabeth Tominey (University Contract Students) for laboratory processing and analysis of sediment and plant tissue. Heavy metals analyses of samples from the plant bioassay were provided by the Analytical Laboratory Group, Environmental Engineering Division, USAE-WES, Vicksburg, Mississippi. All other chemical analyses of sediment, water, and tissues were performed by Dr. Eric Crecelius, Battelle/Marine Sciences Laboratory, Sequim, WA.

At the time of the study, work was conducted under the supervision of Dr. Bobby L. Folsom, Jr., Chief, CMRCG; Mr. Donald L. Robey, Chief, EPED; Dr. John Harrison, Chief, EL, and Mr. Roderick A. Chisholm II, Chief, Environmental Branch, SPN.

At the time of the study, COL Larry Fulton, EN, was Commander and Director during the preparation of this report. Technical Director was Dr. Robert W. Whalin.

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I. INTRODUCTION

Background

Each year the Corps of Engineers dredges sediment from harbors and channels throughout the San Francisco Bay Area to maintain navigation and commerce. Productive use of dredged material to restore and create wetlands has gained more interest in recent years. Suitable dredged material has been used productively in over 120 locations across the U. S. (US Army EM-1110-2-5026). The importance of wetlands to the productivity of estuaries has been realized even more recently in the San Francisco Bay Area. A heightened public interest has emerged to restore wetland acreage that has dwindled away over the past 50 years. Consequently, there has been increased public desire to create and restore wetlands in the San Francisco Bay area in recent years. Dredged material was thought to be of potential value in wetland creation or restoration.

Purpose and Scope

The purpose of this report is to describe the results of a field survey of existing wetland sites in the San Francisco Bay Area and to establish a wetland baseline data set.

<u>Objectives</u>

The objectives of the survey were:

- to identify relatively undisturbed wetlands typical of the San Francisco Bay area;
- 2) to collect samples of the dominant plants, animals (where present) and wetland soil from selected marine and estuarine wetlands in the vicinity of San Francisco Bay;
- 3) to analyze each plant tissue, animal tissue, and soil sample for the presence of contaminants, including toxic heavy metals, polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), and butyltin compounds such as Tributyltin (TBT);

4) to document the location and appearance of each of the sampling sites for future reference by map location and through aerial photographs.

II. FIELD SURVEY

Approach

The interpretation of the results of biological and chemical testing of a sediment to evaluate its potential use in wetland creation requires a yardstick (i.e. reference database) for comparison. For this reason, naturally-occurring wetlands in the San Francisco Bay area were identified and the soil/sediment and the indigenous plant and animal communities were sampled. In coordination with personnel of the USACE San Francisco District, sites were selected that are considered to be typical undisturbed wetlands by the District and the Federal and State resource agencies. Unfortunately, since settlement, the San Francisco Bay Area has been the source of anthropomorphic disturbance that has resulted in both modification of the pre-settlement landscape and the introduction of numerous plant and animal species. As a result, it is not always possible to locate the desired species or a sufficient biomass of the desired species for analysis. During the summer of 1990, when the field survey was conducted, animal species, live populations of bivalve mollusks in particular, were not present in either the marine or estuarine wetlands. The paucity of animals has certainly limited the comparative value of the following survey, however, the plant and sediment/soil collections do provide a suitable data base for the establishment of a baseline for wetlands in the San Francisco Bay Area comparison with the species employed in the mesocosm test procedures.

Methods and Materials

<u>Site Selection</u>. The initial selection of the wetlands to be considered was provided by the USACE San Francisco District personnel and consisted of wetlands selected within known wetland refuges and locations generally thought to have been little affected by anthropomorphic activities during recent years, or as in the case of Site 8, the disturbance was well documented and the site was of

interest to the District.

The potential sites were surveyed from the air and if there were no obvious reasons to reject the site, such as proximity to industrial activity, a location within the site was selected for the field sampling (Figure II-1). On several occasions if the helicopter employed by the field collection personnel was not able to land, if the field crew was not able to reach a suitable plant community due to dense vegetation once landed, or if the appropriate plant species were not present, the collection site was relocated as required.

<u>Plant and Animal Identification</u>. Plants and animals collected were identified using appropriate resource materials and reports such as Fernald (1950), Josselyn (1983), and Gosner (1979). Where appropriate, local botanists were consulted to confirm the plant identifications in the field.

Field Collection Technique. Locations of field collections, water salinity, and plant and animal species collected are given in Table II-1. In the marine wetland areas Spartina foliosa and Salicornia subterminalis were the predominate species. Spartina was collected from the low marsh (nearest the water) and Salicornia was collected from the high marsh (the zone inland from the Spartina). In general, two samples of Spartina labeled A and B were collected from the intertidal, low marsh and two samples of Salicornia labeled C and D were collected from the more upland, high marsh. In the estuarine and fresh water areas of the survey, the dominant low and high marsh plants were collected as before, labels A and B designated low marsh and C and D designated high marsh. Due to the variability of the less marine habitats, plant species varied between Typha, Scirpus, and Salicornia, depending on the wetland area. Each sample collected consisted of the amount of plant material that could be encompassed by a 28.7-cm square made from a folding carpenter's ruler, or 823.7 cm². The plants were clipped 5 cm above the ground. Plant material from each sample was placed in a Ziploc bag or a trash can liner, depending on the amount of vegetation, and placed on ice for shipment to the WES.

After the plants were collected a soil sample of the surface material was collected from each of the sampling locations, A-D. Soil samples were placed in Ziploc bags and placed on ice for shipment to WES. A refractometer was used to measure the salinity of the water.

Any animals suitable as sentinel species were collected at each field collection site. Animal collections represent a composite sample rather than two discrete points within the field site. When a single species was found in sufficient numbers to provide appropriate biomass for chemical analysis, the animals were collected, placed in Ziploc bags and placed on ice for shipment to WES.

At each site the location was plotted on a map (Figures II-2, II-3, and II-4) and an aerial photograph was made of the site, looking north at 30- to 45-m altitude (Figure II-5 - II-16).

Laboratory Procedures. Plant, animal, and soil samples were shipped and stored at 4°C until processed. The plant leaf samples were rinsed three times in reverse osmosis (RO) purified water blotted with paper towels, and weighed. Animal sentinel species (mollusks) were rinsed in RO water and the soft tissues removed from the shells. Only the soft tissues were submitted for chemical analysis. Soil samples were composited to form one sample from each field site. Plant tissue, animal tissue, and soils were placed in acid-washed, hexane-rinsed glassware and shipped at 4°C to Battelle Pacific Northwest Laboratory for chemical analysis. Freeze dried and ground sediment samples were analyzed by energy dispersive X-ray fluorescence for As, Cr, Cu, Ni, Pb and Zn (Nielson and Sanders 1983). The other metals were analyzed by atomic absorption spectrometry (AA) after the sediment was totally dissolved in a mixture of nitric, perchloric and hydrofluoric acids at an elevated temperature (130 degrees C) in a sealed Teflon container. Mercury was quantified by cold vapor atomic absorption spectrometry and the other metals (Ag, Cd and Sb) were quantified by Zeeman graphite furnace AA with matrix modifiers. Sediment and tissue samples were extracted with a mixture of methylene chloride, tropolone and sodium sulfate for

the Tributyltin (TBT) analyses. The extract was derivatized and analyzed by gas chromatography with a flame photometric detector (GC-FPD) similar to the method of Ungery et al. (1986). Sediments were analyzed for base-neutral acids using US EPA Method 625, which indicates solvent extraction, column cleanup and the quantification by GC/MS. The PCBs and DDT were analyzed by US EPA Method 8080 which quantified by GC-ECD. Volatiles were analyzed by US EPA Method 624 using GC/MS. All samples for tributyltin analyses were placed in hexane rinsed and oven-dried amber glass containers and frozen prior to shipping.



Figure II-1. Sampling was Accomplished by Helicopter.

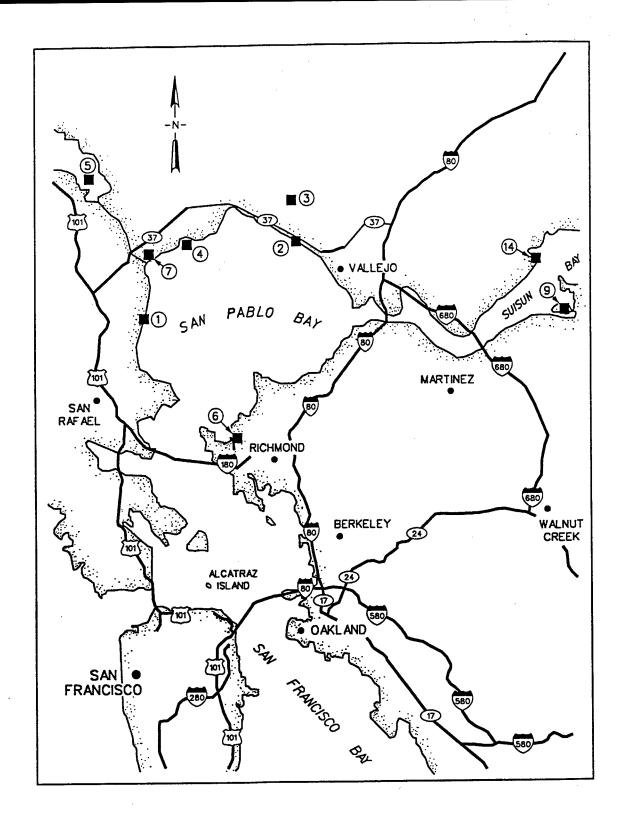


Figure II-2. Field Survey Map for Sites 1-7, 9, and 14.

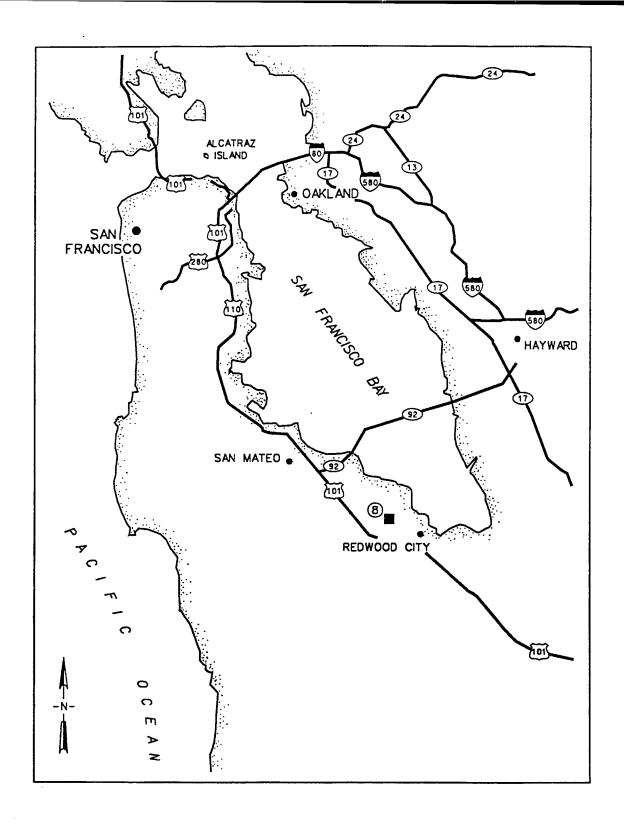


Figure II-3. Field Survey Map for Site 8.

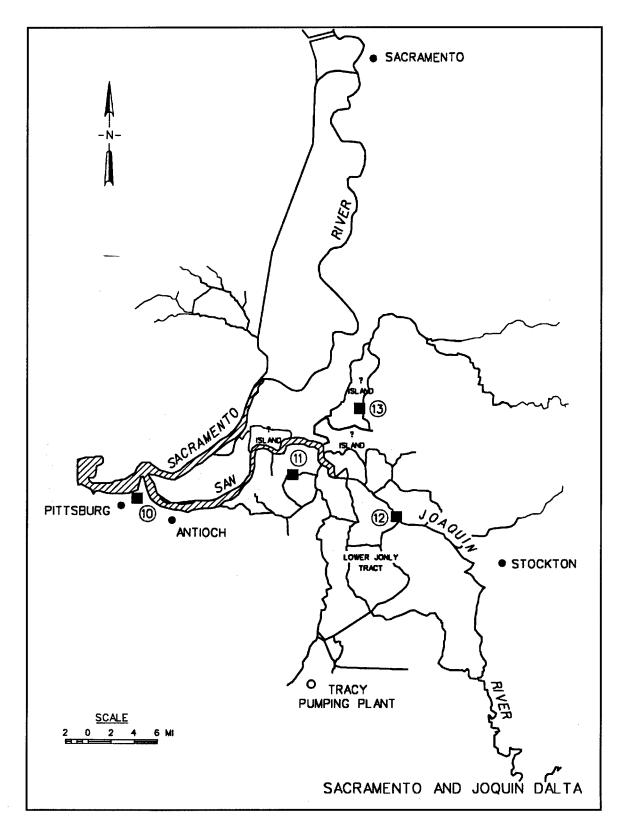


Figure II-4. Field Survey Map for Sites 10-13.

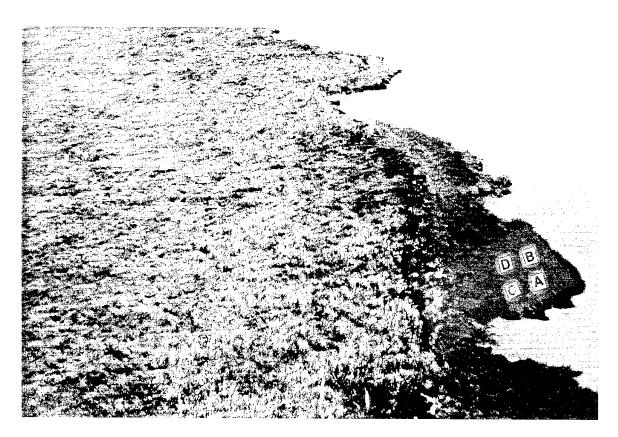


Figure II-5. Field Sampling Site 1 Hamilton Air Force Base (Reference)

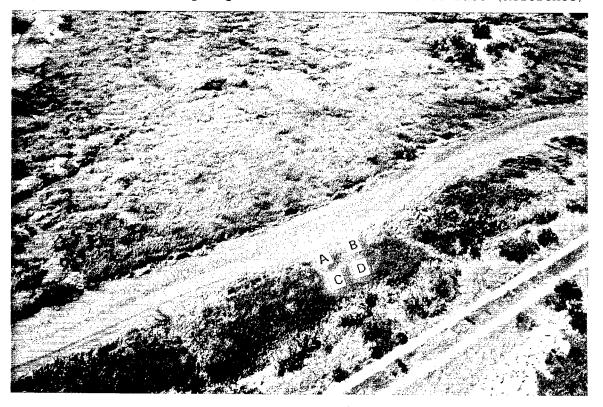


Figure II-6. Field Sampling Site 2 Sears Point Road/ Cullinan Ranch

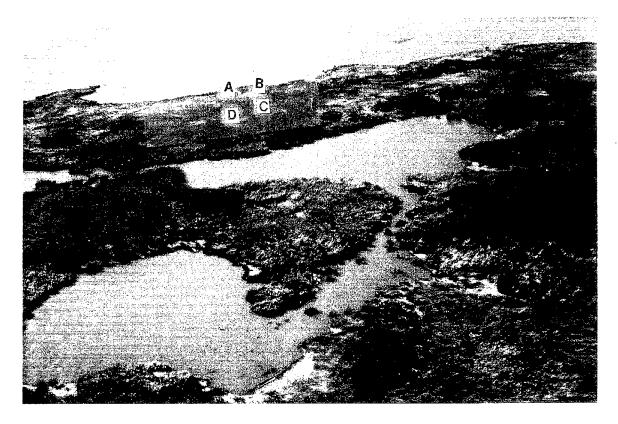


Figure II-7. Field Sampling Site 3 Dutchman Slough/ Cullinan Ranch



Figure II-8. Field Sampling Site 4 Lower Tubbs Island Wetland

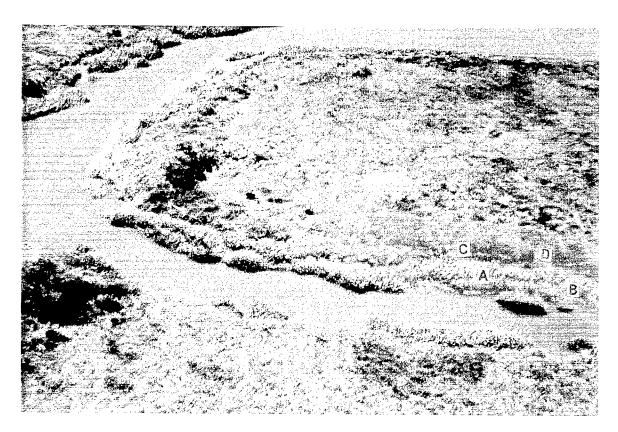


Figure II-9. Field Sampling Site 5 Petaluma Marsh

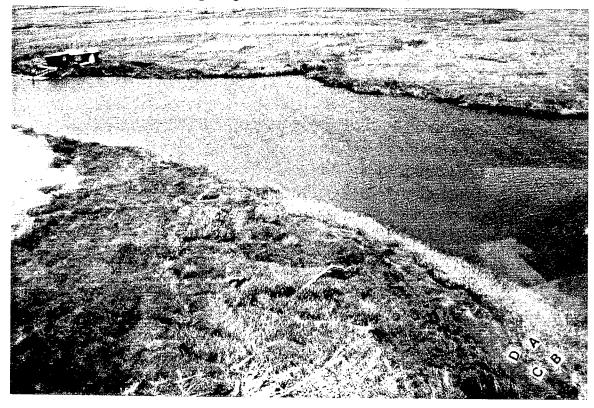


Figure II-10. Field Sampling Site 7 Sonoma Baylands



Figure II-11. Field Sampling Site 8 Deepwater Slough

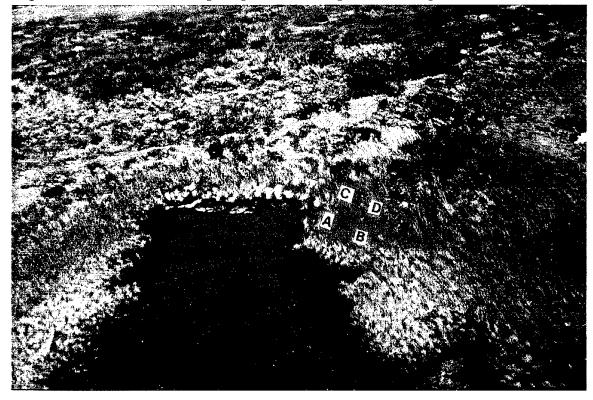


Figure II-12. Field Sampling Site 9 Roe Island, NWS Concord



Figure II-13. Field Sampling Site 10 Browns Island



Figure II-14. Field Sampling Site 11 Near Franks Tract



Figure II-15. Field Sampling Site 13 Staton Island, South Fork



Figure II-16. Field Sampling Site 14 Suisun Slough (Reference)

Results and Discussion

Chemical Analysis. Results of the analyses for metal, butyltin, PAH, PCB, and pesticide contaminants are shown in Tables II-2 through II-6. Metal concentrations (Table II-3) represent naturally-occurring background levels for the enormous San Francisco Bay area. These levels of metals result from the presence of heavy metals in the earth's crust, water borne metals, metals in tide water and any atmospheric fallout. These data represent areas thought to be relatively undisturbed, and uncontaminated by agricultural or industrial activities (Site 8 however, was the only disturbed site that had been created from dredged material). While the sediment arsenic concentrations are relatively low and range up to 23.7 mg/kg for site 1 and plant tissue contents are at or below detection limits, those few animals collected had tissue arsenic concentrations approaching or at a FDA-type tissue arsenic content of 10 ug/g (dry weight basis) for mollusks and crustacea used by Australia (Lee et al. 1991). While the few animals sampled in this field survey did not show elevated levels of chromium, zinc or lead, snails collected from the Tiburon area and used in wetland bioassays of dredged material from Oakland Harbor and J. F. Baldwin Ship Channel showed levels of chromium up to 74.9 ug/g, zinc up to 797 ug/g and lead up to 31.6 ug/g (Lee et al. 1994). These bioassays were conducted at the same time of the Field Survey and indicate that chromium, zinc and lead concentrations in certain native wetland animals may be elevated in the San Francisco Bay area. Of particular concern is the lead levels that appear to approach and exceed the 25 ug/g lead concentration established in Australia for human consumption of mollusc. Both Spartina and Salicornia plant species collected during the Field Survey showed tissue lead concentrations up to 4.9 and 5.4 ug/g, respectively. These values approach and exceed the 5.0ug/g concentration established by the Dutch for mixed animal feed (van Driel et al. 1985). These data suggest that lead contents of some wetland plants and certain wetland animals in existing wetlands may be of concern to the foodwebs associated with these sites in the San Francisco Bay area. The presence of copper at what may appear to be an elevated level in the animals collected at the field sites is likely related to the copper-containing respiratory pigment

characteristic of the Mollusca as a group. The butyltin levels are generally near or below detection limits with the exception of tributyltin in bivalve mollusks (Table II-2). Butyltin values in boldface print are above detection limits. Modiolus collected at Site 1 contained 34.9-38.3 ug/kg tributyltin and Corbicula collected at Site 13 contained 40.7 ug/kg. These levels are the highest determined in any survey animals and probably reflect trace amounts accumulated from the water filtered by these mollusks. Since butyltins do not exist in nature, the levels reported are assumed to be the result of contamination from marine antifouling coatings. PCBs were not found above the detection limits with the exception of some trace amounts of Aroclor 1254 in the wetland soils collected at Sites 1-4 (Table II-4). As noted for butyltin compounds, PCBs are not found naturally in the environment and their presence above detection limits indicates some anthropomorphic contamination. The presence of some PAHs at levels greater than detection in the wetland soils at some sites may also be indicative of anthropomorphic influences (Table II-5). Those PAHs indicated in boldface print are above the detection limits but at the same time they are still relatively low and generally do not exceed 50-100 ug/kg. Pesticides were notably below detection limits with only a few exceptions (boldfaced in Table II-6).

The naturally-occurring wetlands in the San Francisco region that were selected for this survey appeared to be relatively uncontaminated by post-settlement agriculture and industrialization. Even Site 8 constructed on dredged material contained only low levels of the contaminants evaluated. Arsenic tissue contents observed in the few animals collected appeared to be close or at the action level established in Australia for mollusks and crustacea. Further study of arsenic in wetland foodwebs in the San Francisco Bay area appears to be warranted. Likewise, some wetland plants and animals were observed to contain elevated levels of chromium, zinc and/or lead. Lead particularly was observed to approach and exceed tissue lead contents established for plant feed mixes by the Dutch and lead concentrations in mollusks established by the Australian. Further evaluation of chromium, zinc and lead in existing wetlands of San Francisco Bay appears to be warranted.

Although the levels of anthropomorphic contaminants appear to be low, all the selected sites were characterized by a lack of animals, particularly those that could have been used as sentinel species. All the marine sites were characterized by the dead remains of what must have only recently been extensive beds of ribbed mussels. Although the plant communities have survived, there is a need to at least develop a plausible explanation for the lack of living mussels. The introduction and proliferation of a tiny exotic clam from Asia, Potamocorbula amurensis may be a contributing factor. This species out-competes and is a more efficient feeder than existing species. In the brackish and freshwater sites, the clam Corbicula was represented also by many shells and only a few live animals. The invasion of Potamocorbula amurensis also includes brackish waters such as in Suisun Bay. Snails were equally scarce on all sites but Site 8. This lack of animals is quite peculiar since the snails, and mussels are invasive species from the U. S. East Coast, and the clams are an equally opportunistic species from Asia. While it is likely that the introduction of the exotic species (Nassarius, Modiolus, and Corbicula) accompanied some disturbance of the California wetlands, these are very hardy species and would have been expected to survive subsequent disturbances. However, Potamocorbula amurensis could even be out-competing these species. It is realized that the entire San Francisco Bay area has suffered from an extensive drought over the past five years and could have contributed to the observation of few live animal species in the wetlands sampled. Likewise, the faunal component of San Francisco Bay wetlands is not well documented and perhaps the fauna may not be particularly diverse or abundant in the West Coast wetlands.

Table II-1. Wetland Field Survey Site List of Samples Collected.

partina foliosa (2) ⁺ clicornia sp. (2) clicornia sp. (2) clicornia foliosa (2) clicornia sp. (2) clicornia foliosa (2) clicornia foliosa (2) clicornia sp. (2) clicornia sp. (2) clicornia sp. (2)
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)II (4)
partina foliosa (2) alicornia sp. (2) pil (4)
partina foliosa (2) alicornia sp. (2) oil (4)
permission
partina foliosa (2) alicornia sp. (2) oil (4)
alicornia sp. (4) nails (1) oil (4)
cirpus sp. (4) oil (4)
ypha sp. (4) oil (4)
cirpus sp. (4) oil (4)
mitted
ypha sp. (4) corbicula sp. (1) coil (4)
cirpus sp. (2) calicornia sp. (2) coil (4)

⁺ number of samples

Table II-2. Butyltin Concentration in Naturally-occurring Wetland Plants and Soils (Concentration in ug/kg dry-weight)

Site		etrabutyl Tin	Tributyl Tin	Dibutyl Tin	Monobutyl Tin
1	Soil	<1.3	2.3	<1.4	<1.3
	Plants <i>Spartina</i> a	<4.7	9.2	<4.3	19.8
	Spartina b	<3.3	<3.7	<3.1	<3.1
	Salicornia c		<1.8	<1.5	<1.5
	Salicornia d		7.4	<2.9	21.1
	Animals	-0.2		12.15	
	Modiolus R1	<3.9	34.9	9.3	7.8
	Modiolus R2	<5.0	38.3	<5.0	<4.6
2	Soil	0.5	2.6	3.6	17.0
	Plants				2000
	<i>Spartina</i> a	<2.3	<2.5	<2.2	<2.2
	Spartina b	<3.1	<3.4	<2.9	<2.9
	Salicornia c		6.5	<3.5	7.1
	Salicornia d	<3.2	7.4*	<2.9	12.5*
3	Soil	3.0	2.6	~1 4	2.0
J	Plants	3.0	4.0	<1.4	2.9
	Spartina a	<2.1	. 2.9	<2.1	<1.9
	Spartina b	<3.6	8.3	3.7	5.1
	Salicornia c	2.2	3.1	6.6	15.6
	Salicornia d	3.3	4.8	4.4	7.1
4	Soil Plants	<1.4	3.1	2.0	2.3
	Spartina a	2.7	5.2	2.5	NA
	Spartina b	<4.2	<4.6	<3.9	<3.9
	Salicornia c	3.2	6.0	19.0	64.3
	Salicornia d	<3.2	7.0*	<2.9	17.6
5	Soil	<1.2	3.1	1.7	<1.2
	Plants				- · ·
	Spartina a	<2.2	5.2	<2.2	<2.0
	Salicornia c		6.0*	<2.7	18.1
	Salicornia d	54.7	35.8	2.3	5.3
7	Soil Plants	2.9	2.0	9.6	2.1
	Spartina a	<4.1	<4.4	<3.8	<3.8
	<i>Spartina</i> b	<3.3	<3.6	<3.1	<3.1
	Salicornia c	8.2	9.6*	5.6	6.1
	Salicornia d	<5.8	12.6*	13.2	<5.3
В	Soil	2.0	2.3	<1.4	<1.3
	Salicornia a	2.4	4.5	2.2	53.5
		<3.1	5.3	<3.1	<2.9
		2.0	3.5	11.1	24.6
	Salicornia d	<2.3	4.0	2.8	2.1
	Animals Comithidan	-1 4	2 5	4.5	
	Cerithidea?	<1.4	3.5	4.2	1.7
	Cerithidea?	<0.6	1.4	0.9	1.6

Table II-2 Concluded. Butyltin Concentration in Naturally-occurring Wetland Plants and Soils (Concentration in ug/kg dry-weight)

Site		Tetrabutyl	Tributyl	Dibutyl	Monobutyl
		Tin	Tin	Tin	Tin
				2.6	^ •
9	Soil	<1.9	3.2	9.6	2.1
	Plants				
	<i>Scirpus</i> a	6.1	8.3*	4.6	4.3
	<i>Scirpus</i> b	<3.2	6.5*	<2.9	<2.9
	Scirpus c	<3.8	8.4*	3.6	5.0
	Scirpus d	<5.1	14.7*	6.7	<4.6
10	Soil	<1.5	3.6	<1.6	4.7
	Plants				
	Typha a	11.4*	4.7*	2.5*	9.5*
	Typha b	6.1*	5.7*	3.0*	4.1*
	Typha c	11.0*	3.9*	2.8*	<2.2
	Typha d	6.3*	2.2*	3.7*	14.0*
11	Soil	<0.9	33.4	<0.9	<0.9
	Plants				
	Scirpus a	<4.1	5.6	5.6	<3.7
	Scirpus b	5.5	5.2	2.6	9.5
	Scirpus c	<2.2	4.1	<2.1	4.4
	DOLLPUD G		,		
13	Soil	<0.9	1.8	<0.9	<0.9
	Plants				
	Typha a	13.1*	8.4*	4.4*	7.0*
	Typha b	14.7*	6.8*	4.1*	5.5*
	Typha c	<3.2	<3.6	<3.0	<3.0
	Typha d	18.3*	4.3*	2.3*	3.3*
	Animals			- · ·	
	Corbicula	14.6	40.7	30.1	11.8
1.4	Soil	<1.3	3.5	1.8	2.4
14	Plants	~1.3	3.3	1.0	4.4
	Scirpus a	1.2	2.2	1.1	NA
	Salicornia c		4.8	2.2	35.1
	Salicornia d		4.4	<3.0	5.6

^{*} indicates analyte detected in the blank

Heavy Metal Concentration in Naturally-occurring Wetland Plants and Soils (Concentration in mg/kg dry-weight) Table II-3.

Site		As	Ç	Cu	Nİ	Pb	Se	Zn	po	Нд
1	Soil	23.7	174.0	71.6	102.0	36.3	0.33	137.2	0.33	0.515
	Plants Spartina a	96'0>	•	9	6.	•	. 7	7.	.05	00.
		<0.86	7.1	4.35	4.34	2.2	<0.64	21.2	0.032	0.015
	ia		•	6.	0.	•	٠,	ω.	.05	.01
	Salicornia d	0.94	•	4.	٠.	•		9	90.	°.
							•		1	;
	Modiolus R1	8.76	4.0	23.1	7.74	1.71	4.19	71.7	3.53	0.398
	Modiolus R2		•	0	ų.	რ.	.5	_;	7.	. 30
7	Soil	18.5	219.0	90.6	125.4	36.8	0.33	158.9	0.32	0.469
	Plants							,	1	
		<1.2	8 6.8	6.44	4.61	3.0	0.85	30.5	0.063	0.02
	Spartina b	<1.1	•	7	Ξ.	۲.	0.7	₹.	90.	.02
	ia	<0.91	ij	•	₹.	•	7	。	. 16	0
	Salicornia d	<1.1	•	ن	0.	•	0.7	.	0.	.02
ю	Soil	18.2	179.0	70.1	145.2	33.0	0.42	166.1	0.41	0.166
	Plants			,	•	•	,		•	0
	Spartina a	1.27	7.2	13.7	8.76	1.39	<0.63	98.0	0.00	0.022
	Spartina b		٠	٠. س	7.	æ '	9.0	4	٠,	. 02
	Salicornia c		•	ω	ų.	9	9.0	. 0	0	.01
		<0.86	•	•	7.	٥.	9.0		0.	. 02
4	Soil	13.4	214.0	72.6	135.5	35.7	0.17	160.1	0.31	0.439
	Plants Charting a	1 83			C		9	c	0	.01
	Sparting a		•	•	?	. 6	0		0	.01
	. e	7		· ~	6.29	1.42	<0.79	45.7	0.29	0.038
	Salicornia d	<0.76	4.6	9	9.	•	9.	2	٠.	.01
Ŋ	Soil	14.4	179.0	9.19	125.9	34.1	0.25	158.4	0.26	0.419
		(,		•	•	L	•	Č
		0.99	•	4.	٦.		9.0	ζ,	۰.	. 02
	Spartina b	٦,	•	•	7	``	<u>ب</u>	4. r	22.	3 6
	Salicornia c	<0.62 <0.62 <0.88	8.4	11.5	0.00 4.49	2 4 0 8 . 80 0 8 . 80	<0.0> <0.0>	44.3	0.039	0.018
		•	•	•	•	•				ł >

Continued. Heavy Metal Concentration in Naturally-occurring Wetland Plants and Soils (Concentration in mg/kg dry-weight) Table II-3.

Site		As	r.	Ca	ŊŢ	БЪ	Se	Zn	cq	Нд	1
7	1	10.6	•	.5	8. (•	0.3	. 0	.33	.46	
	Spartina a Spartina b Salicornia c Salicornia d	<pre><1.1 <0.99 1.14 2.20</pre>	25.4 25.4	4.64 6.1 8.79 17.7	4.29 7.40 5.37 19.20	2.7 <2.30 5.40	<0.72 <0.72 <0.69 <0.73	28.5 19.5 37.5	0.064 0.067 0.10	0.009 0.017 0.059	
∞	Soil Plants Salicornia a Salicornia b Salicornia c Salicornia d	5.29 <0.003 <0.99 <0.85 <0.83	224.0 0.4 0.5 0.4	35.9 9.7 8.8 8.9	72.2 <1.7 1.47 1.48 <0.93	20.9 0.23 0.92 0.38	<pre><0.14 <1.10 <0.77 <0.66 <0.65</pre>	88.5 27.3 57.4 36.0	0.14 0.13 0.21 0.15	0.074 0.024 0.030 0.025	
6	id id up	11.62 9.22 2.5 19.3 20.7		ρωι. r.4. α.	400 40 40	48 99 0	W 0 4 4 W 6	76 76	00m 44 44	. 18	
10	Scirpus o Scirpus d Scirpus d Soil Plants Typha a Typha b Typha d	 <0.02 <4.2 <0.79 <0.77 <0.77 <0.77 <0.79 	42.2 3.9 43.6 63.6 63.6 63.6	10.13 5.52 67.9 4.06 4.95 5.36	2.03 1.97 93.3 2.28 2.16 2.64	2.50 <2.00 <2.00 <2.00 <1.9 <2.19	0.91 0.91 0.91 0.63 0.63 0.63 0.63	39.7 27.2 27.2 135.0 19.0 17.8 18.6	0.35 0.19 0.56 0.035 0.067 0.100	0.012 0.024 0.321 0.016 0.026 0.022	

Concluded. Heavy Metal Concentration in Naturally-occurring Wetland Plants and Soils (Concentration in mg/kg dry-weight) Table II-3.

Site		As	Cr	Cu	Ni	Pb	Se	uz	po	Hg
11	Soil	15.3	181.0	50.3	83.3	13.7	0.16	8.68	0.22	0 283
	Plants Cairnin	Ċ	c						;	
		78.0	7.7	31.1	6.70	0.87	<0.62	6	•	•
	g string p	68.00	4.0	17.4	•	1.03	<0.65	ω.	•	•
	Scirbus c	<0.79	0.7	15.3	•	0.49	<0.56	8		
	Scirpus d	<0.84	1.9	13.6	•	0.76	<0.61	59.3	0.13	0.028
13	Soil	5.36	110.0	24.2	32.2	14.0	<0.14	161 7	ה ה	010
	Plants) - -	•		0.0	60.0
	Typha a	<0.91	<7.1	•	•	4.0	<0.66	61.0	0.13	
	Typha b	•	8.0	•	•	2.3	<0.63	· ~	0 14	•
	<i>Typha</i> c	•	<4.2	5.12	•	2.8	<0.62	P		•
	Typha d	•	<4.0	4.0	8.31	<2.1	<0.62	98.8	0.09	0.010
	Corbicula	10.79	4.3	164.1	5.78	1.89	3.98	273.0	3, 34	0 460
14	Soil	16.9	193.0	77.3	122.1	32.5	•		98.0	698.0
	Plants		,			•		•))	
		<0.79	m .	7.7	3.47	•	<0.58	•	•	•
		<0.92	3.6		3.78	0.99	<0.70	30.8	0.17	
	salicornia d	<0.95	1.7		1.85	•	<0.71		•	0.019

Site

Aroclor 1260	<30	<100 <100	<100 <100	<100	<30	<100	<100 <20	<100	<30	<20	<20	<20	<20	<30	<20	<100	07V	001/	<30	<20	<100	<100 <100	
Aroclor 1254	150	<100	<100 <100	<100 <100	83	<100	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	<100	210	<20	<20	<20	<20	120	<20	<100	02V V20	001/	<30	<20	<100	<100 <100 <100	I
Aroclor 1248	<30	<100	<100 <100	<100 <100	<30	<100	<100 <20 10</td <td><100</td> <td><30</td> <td><20</td> <td><20</td> <td><20</td> <td><20</td> <td><30</td> <td><20</td> <td><100</td> <td>\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \</td> <td>7100</td> <td><30</td> <td><20</td> <td><100</td> <td>~100 ~00</td> <td>) }</td>	<100	<30	<20	<20	<20	<20	<30	<20	<100	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	7100	<30	<20	<100	~100 ~00) }
Aroclor 1242	<30	<100 <100	<100 <100	<100 <100	<30	<100	<100 /20	<100	<30	<20	<20	<20	<20	<30	<20	<100	<20 7100	<100	<30	<20	<100	<100 <20	ļ
Aroclor 1232	<30	<100	<100 <100	<100 <100	<30	<100	<100 730	<100	<30	<20	<20	<20	<20	<30	<20	<100	<20	<100	<30	<20	<100	<100 <20 <20 <20 <20 <20 <20 <20 <20 <20 <) 1
Aroclor 1221	30	<100	<100 <100	<100 <100	<30	<100	<100	<20 <100	<30	6 20	250	<20	<20	<30	<20	<100	<20	<100	<30	<20	<100	×100 ×20	> 4 /
Aroclor	<30	<100	<100 <100	<100	<30	<100	<100	<20 <100	<30	000	\$20 \$20	<20	<20	<30	000	<100	<20	<100	<30	<200	<100	<100	740
	Soil	Plants (<i>Spartina</i> a (<i>Spartina</i> b		Animals 'Modiolus Rl 'Modiolus R2	soil	Plants Spartina a	Δ,	Salicornia c Salicornia d	Soil	Plants	Sparting a		Salicornia d	Soil		Spartina a	***		Soil		Sparting a	ia.	Salicornia d

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Table II-4 Continued. PCB Concentration in Naturally-occurring Wetland Plants and Soils (Concentration in ug/kg wet-weight)

									-
Site		Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	
7	Soil Plants	<30	<30	<30	<30	<30	<30	<30	
	Spartina a	<100	<100	<100	<100	<100	<100	<100	
	<i>Spartina</i> b	<100	<100	<100	<100	<100	<100	<100	
	Ĺa	<100	<100	<100	<100	<100	<100	<100	
	Salicornia d	<100	<100	<100	<100	<100	<100	<100	
ထ	Soil	<30	<30	<30	<30	<30	<30	<30	
	Plants								٠
	Salicornia a	<20	<20	<20	<20	<20	<20	<20	
	Salicornia b	<20	<20	<20	<20	<20	<20	<20	
	Salicornia	<20	~ 50	<20	<20	<20	<20	<20	
	rnia	<20	<20	<20	<20	<20	<20	<20	
	Animals								
	Cerithidea? 1	<100	<100	<100	<100	<100	<100	<100	
	Cerithidea? 2	<100	<100	<100	<100	<100	<100	<100	
ø	Sofl	<30	<30	<30	<30	· <30	<30	<30	
•	Plants								
	Scirpus a	<100	<100	<100	<100	<100	<100	<100	
	Scirpus b	<100	<100	<100	<100	<100	<100	<100	
		<100	<100	<100	<100	<100	<100	<100	
	Scirpus d	<100	<100	<100	<100	<100	<100	<100	
10	Soil	<50	<50	<50	<50	<50	<50	<50	
	Plants								
	Typha a	<100	<100	<100	<100	<100	<100	<100	
	Typha b	<100	<100	<100	<100	<100	<100	<100	
		<100	<100	<100	<100	0	<100	<100	
	Typha d	<100	<100	<100	<100	<100	<100	<100	
11	Soil	<30	<30	<30	<30	<30	<30	<30	
i I	Plants		.•						
	Scirpus a	<20	~ 50	~ 50	<20	<20	<20	<20	
		<20	<20	~ 50	<20	<20	<20	<20	
		~ 50	~ 50	<20	<20	4 20	<20	<20	
	Scirpus d	<20	~ 50	~ 50	<20	<20	<20	<20	

Concluded. PCB Concentration in Naturally-occurring Wetland Plants and Soils (Concentration in ug/kg wet-weight) Table II-4

Site		Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	
13	Soil	<30	<30	<30	<30	<30	<30	<30	
	Typha a	<100	<100 <100	<100	<100	<100	<100 <100	<100	
	Typha c Typha d	<100 <100 <100	V100 V100	<100 <100 <100	<100 <100 <100	×100 ×100	×100 ×100	<100 <100	
	Animals Corbicula	<100	<100	<100	<100	<100	<100	<100	
14	Soil	<30	<30	<30	<30	<30	<30	<30	
	Plants Scirpus a Salicornia c Salicornia d	<20 <20 <20		\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	420 420 420 420	<20 <20 <20	

PAH Concentration in Naturally-occurring Wetland Plants and Soils (Concentration in ug/kg wet-weight) Table II-5.

Site		Acenaph- thene	Acenaph- thylene	Anthr- acene	Benzo(a) Anthracene	Benzo[b] Fluoranthene	Benzo[k] e Fluoranthene	Benzo[a] Pyrene
	Soil	12	15	38	100	96	82	130
	Spartina a	<10	<10	<10	<10	<10	<10	<10
	Spartina b	<10	<10	<10	<10	<10	<10	<10
	Salicornia c	<10	<10	<10	<10	<10	<10	<10
	Salicornia d	<10	<10	<10	<10	<10	<10	<10
	Animals							
		<10	<10	<10	<10	<10	<10	<10
	Modiolus R2	<10	<10	<10	<10	<10	<10	<10
7	Soil	<10	<10	15	41	58	44	63
	Plants							
	Spartina a	<10	<1.0	26	<10	<10	<10	<10
	Spartina b	<10	<10	<10	<10	<10	<10	<10
	ia	<10	<10	<10	<10	<10	<10	<10
	Salicornia d	<10	<10	<10	<10	.<10	<10	<10
m	Soil	<10	<10	<10	, 77	40	26	39
		•	,	•	,	,	•	•
		~10	~10	012	01>	VI0	01>	<10
	Spartina b	<10	<10	<10	<10	<10	<10	<10
	ia	<10	<10	<10	<10	<10	<10	<10
	Salicornia d	<10	<10	<10	<10	<10	<10	<10
4	Soil	<10	<10	15	47	29	50	80
	gnartina a	012	V10	~10	V.	×10	410	<10
		<10	<10	<10	<10	<10	<10	<10
	-	<10	<10	<10	<10	<10	<10	<10
		<10	<10	<10	<10	<10	<10	<10

Continued. PAH Concentration in Naturally-occurring Wetland Plants and Soils (Concentration in ug/kg wet-weight) Table II-5

				Satha	Donas Co.	Bonzofhl	Benzof k1	Renzofa 1
Site		Acenapn- thene	Acenaph- thylene	acene	Anthracene			Pyrene
2	Soil	<10	<10	<10	<10	<10	<10	<10
		,	,	7	V10	×10	<10	<10
	Sparting a	7.		210	<u>10</u>	<10	<10	<10
		25		01. 01.	×10	<10	<10	<10
	Salicornia c Salicornia d	<10	<10 <10	<10	<10	<10	<10	<10
,	Soil	<10	<10	16	67	82	72	98
•	ts	•	,	,	7	012	~10	<10
		01V) v) i) TO) T	<10
		010	75	2 7	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	<10	<10	<10
	Salicornia d	V10	\$10 \$10	<10	<10	<10	<10	<10
œ	Soil	<10	<10	<10	<10	15	11	11
•	Plants		•	•	,	5	· `	
		<10	<10	~10	01>	017	710	7.7
		<10	<10	~10	<10	010	7.7) I
	Salicornia c	~10	<10	0TV	012	017	01,1	21.
	rnia	<10	<10	<10	<10	<10	01>	01×
		,	617	V10	×10	<10	<10	<10
	Cerithidea? 2	10	<10 <10	<10	<10	<10	<10	<10
თ	Soil	<10	<10	11	26	83	67	62
	Plants Gritnus a	×10	<10	<10	<10	<10	<10	<10
		<10	<10	<10	<10	<10	<10	<10
		<10	<10	<10	<10	<10	<10	<10
	Scirpus d	<10	<10	<10	<10	<10	<10	<10
10	Soil	. 19	120	97	150	211	150	130
	runts Troha a	<10	<10	<10	<10	<10	<10	<10
		<10	<10	<10 20 20 20 20 20 20 20 20 20 20 20 20 20	<10	^10 ?	×10	<10 10 10 10 10 10 10 10 10 10 10 10 10 1
	Typha c	\$ \$10 \$ \$10	×10 ×10	<10 <10	9 CF	<10 <10	<10 <10	<10.
		Ì						

Continued. PAH Concentration in Naturally-occurring Wetland Plants and Soils (Concentration in ug/kg wet-weight) Table II-5

Site		Acenaph- thene	Acenaph- thylene	Anthr- acene	Benzo[a] Anthracene	Benzo[b]	Benzo(k) e Fluoranthene	Benzo[a] Pyrene
11	Soil Plants	<10	<10	<10	<10	<10	<10	<10
	Scirpus a	<10 <10	<10 <10 <10	<10 <10 <10	<10 <10	<10 <10	<10 <10	<10
	Scirpus c	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	V10 V10	100 100 100 100 100 100 100 100 100 100	<10 <10	<10 <10	<10 <10	<10 <10 <10
13	Soil	<10	<10	<10	29	18	20	22
	Typha a	<10	<10	<10	<10	<10	<10	<10
	<i>Typha b</i> <i>Typha</i> c	<10 <10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10
	<i>Typha d</i> Animals	<10	<10	<10	<10	<10	<10	<10
	Corbicula	<10	<10	<10	<10	<10	<10	<10
14	Soil	<10	<10	<10	11	18	13	16
	Scirpus a Salicornia c	<10 <10	4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	\$\frac{10}{10}\$	<10 <10	<10 <10	<10 <10	<10 <10
	Salicornia d	<10	<10	<10	<10	<10	<10	<10

Table II-5 Continued. PAH Concentration in Naturally-occurring Wetland Plants and Soils (Concentration in ug/kg wet-weight)

	•	ı							
Site		Benzo [g,h,i]	Chrysene	Dibenzo [a,h] anthracene	Fluor- anthene	Fluorene	Ideno- 1,2,3- pyrene	2-Methyl- Naph- thalene	Naph- thalene
1	Soil	110	100	19	190	<10	66	30	61
	Plants Sparting a	<10	<10	<10	<10	15	<10	29	63
		<10	<10	<10	<10	<10	<10	<20	42
	7 (<10 <10	<10	<10	<10	<10	<10	20	20
	Salicornia d	<10	<10	<10	<10	<10	<10	<20	<50
		,	1	•	,	,	,	46	001
	Modiolus R1	<10	<10	<10	~10	01×	010	ָרָ לָּ	77
	Modiolus R2	<10	<10	<10	<10	<10	<10	<30	10
2	Soil	89	51	10	94	<10	29	27	53
	Plants	•	•		,	,	٠ ۲	2.1	<50 50
	<i>Spartina</i> a	<10	~10	01>	015	017		4 6) (
	Spartina b	<10	<10	<10	<10	~10	0T>	32) (2)
	ia	<10	<10	<10	<10	<10	<10	24	61
	Salicornia d	<10	<10	<10	<10	. <10	<10	37	86
m	Soil	53	27	<10	54	<10	43	35	64
-	Plants		,	•	•	,	,	•	9
	Spartina a	<10	<10	<10.	<10	610	012	# 7	0 6
	Spartina b	<10	~10	<10	<10	<10	<10	29	æ :
	ja	<10	<10	<10	<10	<10	<10	<20	<50
	Salicornia d	<10	<10	<10	<10	<10	<10	78	83
4	Soil	88	53	11	110	<10	11	25	20
	Plants	•	,	;	,	,	٠ ۲	007	0.57
		<10	012	01,	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	7.7	7.70	07/	200
		010	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	7.0	7.7	7.		2,5	7.3
	Salicornia c	×10	<10 <10	<10 <10	×10 ×10	<10 <10	<10	<20	41
		2) (•					
ĸ	Soil	<10	<10	<10	<10	<10	<10	15	34
		7	2.7	017	012	<10	<10	25	89
	Spartina a) (V	<10 <10	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	\.	<10	<10 <10	<20	<50
	~~	<10	<10	<10	<10	<10	<10	<20	30
		<10	<10	<10	<10	<10	<10	24	9

Continued. PAH Concentration in Naturally-occurring Wetland Plants and Soils (Concentration in ug/kg wet-weight) Table II-5

Site		Benzo [g,h,i] perylene	Chrysene	Dibenzo [a,h] a	Fluor- anthene e	Fluorene	Ideno- 1,2,3- pyrene	2-Methyl- Naph- thalene	Naph- thalene
7	Soil Plants	100	7.1	15	120	<10	87	12	26
	Spartina a	V10	710	×10	×10	<10	< 10	788	52
		^10 ^10	710 VIO	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	V V V	×10 ×10	V V	022	3 8
	Salicornia d	<10	<10	<10	11	<10	<10	<20	30
ω	Soil	15	15	<10	18	<10	11	<10	26
	ornia	<10 10 10 10 10 10 10 10 10 10 10 10 10 1	<10	<10 210	<10	<10	<10	30	16
	Salicornia b Salicornia c	~10 ~10		0 V V V	~10 ~10	<10 <10	×10 ×10	7 X	5 W
	Salicornia d	<10	<10	<10	<10	<10	<10	78	68
	Cerithidea? 1 Cerithidea? 2	<10 <10	<10 11	<10 <10	<10 <10 <10	. <10 <10	<10 <10	<30 <30	09>
σ,	Soil	<10	<10	17	26	83	67	NA	62
		<10	<10	<10	<10	<10	<10	NA	<10
		<10	<10	<10	<10	<10	<10	NA	<10
	Scirpus c Scirpus d	~10 ~10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	NA NA	<10 <10
10	Soil Dlants	19	120	76	150	211	150	NA	130
	Typha a	<10	<10	<10	<10	<10	<10	NA	<10
	Typha b	250	7 Ç	55	1 10 10 10	V 710	707	NA	V 710
		<10	<10	<10	<10	<10	<10	NA	<10
11	Soil	<10	<10	<10	<10	<10	<10	NA	<10
	Scirpus a Scirpus b Scirpus c		7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	7770	00000	V V V V V V V V V V V V V V V V V V V	7 7 7 7 V	NA NA NA	V V V V V V V V V V V V V V V V V V V
		?	,	?	?	21,	2	S M	01/

Continued. PAH Concentration in Naturally-occurring Wetland Plants and Soils (Concentration in ug/kg wet-weight) Table II-5

Site		Benzo [g,h,i] Perylene	Chrysene	Dibenzo [a,h] anthracene	Fluor- anthene	Fluorene	Ideno- 1,2,3- Pyrene	2-Methyl- Naph- Naph- thalen thalene	. Naph- thalene
13	Soil	<10	<10	<10	29	18	20	NA	22
	Plants <i>Typha a</i>	<10	<10	×10	<10 710	<10	<10 <10	NA	<10 <10
	Typha b Typha c		7 7 7	300	7 V V	< 10 < 10 < 10	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	NA NA	<10 <10
	Typha d Animals Corbicula	<10	<10	¢10 <10	<10	<10	<10	NA	<10
14	Soil	<10	<10	<10	11	18	13	NA	16
	Plants Scirpus a Salicornia c Salicornia d	<10 <10 <10	<pre><10 <10 <10 </pre>	<10 <10 <10	<10 <10 <10	<10 <10 <10	<10 <10 <10	NA NA NA	<10 <10 <10

NA - not available

Table II-5 Continued. PAH Concentration in Naturally-occurring Wetland Plants and Soils (Concentration in ug/kg Wet-Weight)

Site	*	Phenanthrene	Pyrene	
1	Soil.	94	240	
	Plants Spartina a	31	<10	
	Spartina b	13	<10	
	ia	10	<10	
	Salicornia d	28	<10	
	Animals			
	Modiolus R1	37	26	
	Modiolus R2	14	<10	
8	Soil	36	120	
ı	Plants			
	ina	30	<10	
	Spartina b	20	<10	
	ia	22	<10	
	Salicornia d	<10	<10	
m	Soil	25	72	
•	Plants			
	Spartina a	14	<10	
	Spartina b	14	<10	
		<10	<10	
	Salicornia d	13	<10	
•	. io	42	140	
r	Plants			
	ina	<10	<10	
	Spartina b	38	<10	
	ia	13	<10	
	Salicornia d	<10	<10	
ư	Soil	<10	<10	
)	Plants		. ,	
	Spartina a	17	^10 /10	
	۵.	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	\10 \10	
	Salicornia c	<10 <10	<10	

Table II-5 Continued. PAH Concentration in Naturally-occurring Wetland Plants and Soils (Concentration in ug/kg wet-weight)

															,																				
Pyrene	160	610	12	1 - /	12	i	20		<10	<10	<10	<10	,	<10	10	68	•	6 <u>1</u>		19	<10	240		<10	<10	<10	<10		<10	•	0[> ;;	017	< \f	<10	<10
Phenanthrene	45		- C	77	017	OTS	<10	,	16	12	20	15		<10	<10	20		17	18	18	11	76	2	×10	<10		100	ì	<10		. 18	18		-	O.L
	Soil	Plants	Spartina a		Salicornia c		r ios	2011				Salicornia d	Animals	idea?	Cerithidea? 2	501	plants	sn			Scirpus d		Soil				Typna c	Typna u	Soil	Plants	sn				a sutting
Site	7						c	×									'n					!	10						11	4					

Concluded. PAH Concentration in Naturally-occurring Wetland Plants and Soils (Concentration in ug/kg wet-weight) Table II-5

Site		Phenanthrene	Pyrene	
13	Soil Dlants	20	46	
	Typha a Typha a Typha b	12 <10	10	
	Typha c Typha d	18 <10	<10 <10	
	Animais Corbicula	<10	<10	
14	Soil Dlante	13	33	
	Scirpus a Salicornia c Salicornia d	<pre><10 <10 <10</pre>	<10 <10 <10	

Table II-6 Pesticide Concentration in Naturally-occurring Wetland Plants and Soils (Concentration in ug/kg wet-weight)

	•										
Site		Aldrin	a-BHC	р-вис	d-BHC	д-внс	Chlor- dane	4,4- DDD	4,4- DDE	4,4- DDT	
1	Soil	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	
	Plants Cparting a	<20	<20	<20	<20	<20	<30	<20	<20	<20	
		<20	<20	<20	<20	<20	<30	<20	~ 50	<20	
	2	<20	<20	<20	<20	<20	<30	<20	~ 50	<20 	
	Salicornia d	<20	<20	<20	<20	<20	<30	<20	<20	<20	
		,	,	,	-	410	<10	<10	<10	<10	
	Modiolus R1 Modiolus R2	<10 <10	10	<10 <10	<10	<10	<10	<10	<10	<10	
8	Soil	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	
ı	Plants		1		Ġ,	,	,	,	,,	27	
		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	7 7 7	V 20	0 7 0 V 2 0 V 2 0	07 V	< 30 < 30 < 30	\ \ \ \	<20 <20	\20 \20	
		720	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	×20 ×20	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	<20	<30	<20	<20	<20	
	Salicornia d	<20 <20	<20 <20	<20	<20	<20	<30	<20	<20	<20	
eri	Soil	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	
ì	Plants	,	•	ç	,	,	,	2	< > < >	C < >	
		<2.0 6.0	42.0	0.7 7,7	, v	2,5	2.6.	0.7	2. 5	<2.0	
		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	77.0	77.0	2,6	× × ×	•			2	
	Salicornia d	×2.0 ×2.0	, 2	42.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2	
			,	•	•	,	,		,	,	
4	Soil	<3.0	<3.0	<3.0	<3.0	0. 83.0	<3.0	<3.0)))	?	
		6	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	
	Spairing a	<20	<20	<20	<20	<20	<30	<20		<20	
	3 4	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	
	Salicornia d	<20	<20	<20	<20	<20	<30	<20	<20	<20	
ហ	Soil	<3.0	<3.0		<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	
		,	0			<2.0	<2.0	<2.0	<2.0		
	Spartina b	<20	<20		<20	<20		<20	420	V 750	
	Salicornia c	<20 <2.0	<20 <2.0	<20 <2.0		<20 <2.0	<20.0	<22.0	<2.0 <2.0		

Pesticide Concentration in Naturally-occurring Wetland Plants and Soils (Concentration in ug/kg wet-weight) Table II-6

Site		Aldrin	а-внс	р-внс	d-BHC	д-внс	Chlor- dane	4,4- DDD	4,4- DDE	4,4- DDT
_	Soil Plants Spartina a Spartina b Salicornia d	<pre><3.0 <20 <20 <20 <20 <20 <20 <20 <20 <20 <2</pre>	43.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.042.0<	×3.0 ×20 ×20 ×20	43.0620620620620	<3.0 <20 <20 <20 <20	<pre><30 <30 <30 <30 <30 <30 <30 <30 <30 <30</pre>	<pre><3.0 <20 <20 <20 <20 <20 <20 </pre>	3.6 <20 <20 <20 <20	<3.0 <20 <20 <20 <20
ω	Soil Plants Salicornia a Salicornia b Salicornia c Salicornia c Salicornia c Cerithidea? I Cerithidea? 1	 43.0 42.0 42.0 42.0 410 410 	\$3.0 \$2.0 \$2.0 \$2.0 \$10 \$10 \$10 \$10 \$10 \$10 \$10 \$10 \$10 \$1	A 20.0	\$3.0 \$2.0 \$2.0 \$2.0 \$2.0 \$2.0 \$10 \$10	 < < 2.0 < < 2.0 < < < 2.0 < < < < 0.0 < < < < 0.0 < < < < 0.0 < <	43.0 410 410 410 410	3.0 6.2.0 6.2.0 6.10 6.10 6.10	3.0 6.2.0 6.2.0 6.10 6.10 6.10	<pre><3.0 <2.0 <2.0 <2.0 <2.0 </pre>
6	Soil Plants Scirpus a Scirpus b Scirpus c	<pre><3.0 <20 <20 <20 <20 <20 <20 <20 <20 <20 <2</pre>	<pre><3.0 <20 <20 <20 <20 <20 </pre>	<pre><3.0 <20 <20 <20 <20 <20 </pre>	<pre><3.0 <20 <20 <20 <20 <20 <20 </pre>	<3.0 <20 <20 <20 <20	× × × × × × × × × × × × × × × × × × ×	<pre><3.0 <20 <20 <20 <20 <20 <20 </pre>	<pre><3.0 <20 <20 <20 <20 <20 <20 </pre>	<pre><3.0 <20 <20 <20 <20 <20 <20 </pre>
10	Soil Plants <i>Typha a</i> <i>Typha b</i> <i>Typha c</i>	<pre><5.0 <20 <20 <20 <20 <20 <20 </pre>	<pre></pre>	<pre></pre>	<pre><5.0 <20 <20 <20 <20 <20 </pre>	<pre><5.0 <20 <20 <20 <20 <20 <20 </pre>	<pre><5.0 <30 <30 <30 <30 <30 <30 </pre>	<pre><5.0 <20 <20 <20 <20 <20 <20 </pre>	<pre><5.0 <20 <20 <20 <20 <20 <20 </pre>	<5.0 <20 <20 <20 <20
11	Soil Plants Scirpus a Scirpus b Scirpus c	<pre></pre>	\$25.00 \$25.00 \$2.00 \$2.00 \$3.00	\$3.0 \$2.0 \$2.0 \$2.0 \$2.0	\$3.0 \$2.0 \$2.0 \$2.0	\$3.0 \$2.0 \$2.0 \$2.0	\$25.0 \$25.0 \$25.0 \$25.0	\$2.0 \$2.0 \$2.0 \$2.0	\$\\ \chi_0.00000000000000000000000000000000000	<pre></pre>

Table II-6 Pesticide Concentration in Naturally-occurring Wetland Plants and Soils (Concentration in ug/kg wet-weight)

Site		Aldrin	a-BHC	р-вис	d-BHC	д-внс	Chlor- dane	4,4- DDD	4,4- DDE	4,4- DDT
13	Soil	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	rrants Typha a	<20	<20	<20	<20	<20	<30	<20	<20	<20
	Typha b	<20	<20	<20	<20	<20	<30	<20	<20	<20
	Typha c	<20	<20	<20	<20	<20	<30	<20	<20	<20
	Typha d	<20	<20	<20	<20	<20	<30	<20	<20	<20
	Animals Corbicula	. <10	<10	<12	<24	<10	<10	<10	<115	<30
14	Soil	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	Scirpus a	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0		<2.0	<2.0
	Salicornia c	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	Salicornia d	. <2.0	<2.0	<2.0	<2.0	<2.0	<2.0		<2.0	<2.0

Continued. Pesticide Concentration in Naturally-occurring Wetland Plants and Soils (Concentration in ug/kg wet-weight) Table II-6

Sulfate Chilo	Site		Dieldrin	Endo-	Endo-	Endo-	Endrin	Hepta-	Hepta-	١.	Toxa-	
Soil Soil Salicornia c Solitaria Solitaria Salicornia c Solitaria Soli				sulran I	II	Sulfate	Alaenyae	CUTOL	chior Epoxide	oxy- chlor	pnene	
Spartina a	п	Soil	<3.0	•	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	0.	<200
Spartina b Salicornia c Spiconia d Salicornia d Salicornia c Spartina b Salicornia d C SO C		ina	<20	<20	<20			:30		<20	<20	<200
Salicornia c <20 <20 <20 <20 <20 <20 <20 <20 <20 <20			<20	<20	<20			:30		<20		<200
Animals Animal			<20	<20	<20			(30		<20		<200
## Modiolus R1		rnia	<20	<20	<20			د30		<20		<200
Modiolus R1 <10 <10 <10 <10 <10 <10 <10 <10 <10 <1			•	•	,			•		,		0
Soil Soil Plants Soil Plants Soil Plants Soil Plants Soil Plants Soil Plants Soil Soil Soil Care			~10	~10	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \			013		01.		2000
Soil Plants Spartina a			<10	<10	<10			<10		<10		<500
Spartina a Spartina b Spartina a Salicornia d Spartina a Spartina b Spartina Spartina b Spartina b Spartina Spartina Spartina Spartina b Spartina Spartin	7	Soil	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<200
Soli Salicornia b		ina	<20	<20	<20	<20		(30		<20	<20	<200
Soil cornia c <20 <20 <20 <20 <20 <20 <20 <20 <20 <20			\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	\$ C >	<20			30		<20	<20	<200
Soil Plants Spartina a \$\sigma_{220}\$ \$< \(\frac{20}{20} \) \$< \(\frac{2}{2} \) \$< \(\fra		2 4	\$2°	420	<20			30		<20	<20	<200
Soil 43.0			4 50	<20	<20			<30		<20	<20	<200
Sparting a <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0	ĸ	Soil	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<200
Sparting a \$2.0		1	,	,	,						0 0	<200
Spartina b <2.0			0.25	74.0	74.0	•	0.4	0.0	0.27	7.7	0.4	7500
Salicornia c <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0			<2.0	<2.0	<2.0	<2.0	0.2>	0.25	0.2>	0.2>	0.22	007>
Salicornia d <2.0		ia a	<2.0	<2·0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<200
Soil <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0			<2.0	2.3	<2.0	<2.0	<2.0	<2.0	•	<2.0	<2.0	<200
ina a <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0	4	Soil	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<200
b <20 <20 <20 <20 <20 <20 <20 <20 <20 <20		103	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0		<2.0	<2.0	<200
ia c <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0			2.00	2002	<20	<20	•	30		<20	<20	<20
d <20 <20 <20 <20 <20 <20 <20 <20 <20 <20		٠.	, , ,	2,7	? ?		_			2	, C	2
			<20	<20 <20 <	<20	<20		<30		<20	<20	<20

Table II-6 Continued. Pesticide Concentration in Naturally-occurring Wetland Plants and Soils (Concentration in ug/kg wet-weight)

Toxa- phene	<pre><3.0 <2.0 <20 <20 <20 <20 <20 </pre>	<3.0 <20 <20 <20 <20	<pre><3.0 <2.0 <2.0 <2.0 <2.0 <10 <10 <10 <10 <10 <10 <10 <10 <10 <1</pre>	<3.0 <20 <20 <20 <20
Meth- oxy- chlor	<pre><3.0 <2.0 <20 <20 <20 <20 <20 <20 <20 <20 <20 <2</pre>	<3.0 <20 <20 <20 <20	<pre><3.0 <22.0 <22.0 <22.0 <20.0 <10 </pre>	<3.0 <20 <20 <20 <20
Hepta- chlor Epoxide	<3.0 <2.0 <20 <2.0 <2.0	3.6 <20 <20 <20 <20	<pre><3.0 <22.0 <22.0 <22.0 <20.0 <10 <10 </pre>	<3.0 <20 <20 <20 <20
Hepta- chlor	<pre><3.0 <2.0 <20 <20 <20 <20 <20 <20 <20 <20 <20 <2</pre>	<pre><3.0 <20 <20 <20 <20 <20 <20 </pre>	< 3.0< 2.0< 2.0< 2.0< 10	<pre><3.0 <20 <20 <20 <20 <20 <20 </pre>
Endrin Aldehyde	<3.0 <2.0 <30 <30 <2.0	<3.0<30<30<30	<pre><3.0 <2.0 <2.0 <2.0 <2.0 <1.0 <10 <10 </pre>	43.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.043.0<
Endrin	<3.0 <2.0 <20 <20 <2.0	<3.0 <20 <20 <20 <20	 < 2.0 < 2.0 < 2.0 < 2.0 < 4.0 	<3.0 <20 <20 <20 <20
Endo- sulfan Sulfate	<pre><3.0 <2.0 <20 <20 <20 <20 <20 <20 <20 <20 <20 <2</pre>	<pre><3.0 <20 <20 <20 <20 <20 <20 </pre>	 43.0 42.0 42.0 410 	<3.0<20<20<20
Endo- sulfan II	<pre><3.0 <2.0 <20 <20 <20 <20 <20 <20 <20 <20 <20 <2</pre>	<3.0 <20 <20 <20 <20	 43.0 42.0 42.0 42.0 410 410 	<3.0<20<20<20
Endo- sulfan I I	<3.0 <2.0 <20 <20 <2.0	<pre></pre>	 3.0 62.0 62.0 62.0 610 610 	<pre><3.0 <20 <20 <20 <20 <20 <20 </pre>
Dieldrin	43.0 42.0 420 42.0	<3.0<20<20<20	 43.0 42.0 42.0 42.0 42.0 42.0 43.0 <li< td=""><td> 43.0 420 420 420 420 </td></li<>	 43.0 420 420 420 420
Dié	Soil Plants Spartina a Spartina b Salicornia c	Soil Plants Spartina a Spartina b Salicornia c	Soil Plants Salicornia a Salicornia b Salicornia c Salicornia c Salicornia c Animals	ı
Site	ις.	r	œ	o.

Concluded. Pesticide Concentration in Naturally-occurring Wetland Plants and Soils (Concentration in ug/kg Wet Weight) Table II-6

Site		Dieldrin	Endo- sulfan I I	Endo- sulfan II	Sulfate	Endrin	Endrin Aldehyde	Hepta- chlor	Hepta- chlor Epoxide	Met- oxy- chlor	Toxa- phene
10	Soil Plants Typha a	<5.0	<5.0	<5.0	0.	<5.0	<5.0	<5.0	0.	<5.0	<5.0
	Typha b Typha c Typha d	<20 <20 <20 <20	<20 <20 <20	<20 <20 <20	750 750 750 750	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	3000 3000 3000 3000		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		750 750 750 750 750
11	Soil Plants	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	Scirpus a Scirpus b Scirpus c Scirpus d	22.0 22.0 25.0 25.0	0.0.0 75.0 75.0 75.0	75.0 75.0 75.0 75.0	\$25.0 \$25.0 \$25.0	<pre></pre>	\$2.0 \$2.0 \$2.0	<pre></pre>	<pre></pre>	^ ^ 2.0 ^ 2.0 ^ 2.0 ^ 2.0	0.00.0 0.00.0 0.00.0
13	Soil Plants Typha a Typha b Typha c	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	<i>Typha d</i> Animals Corbicula	<20 16	<20	<20	<20 <	<20 18	<20	<20	<20 .	<20	<20
14	Soil Plants Scirpus a Salicornia c	× × × × × × × × × × × × × × × × × × ×	\$2.0 \$2.0 \$2.0	A 2 3 . 0 . 0 . 0 . 0 . 0 . 0 . 0 . 0 . 0 .	<pre><3.0 <2.0 <2.0 <2.0 </pre>	<pre></pre>	<pre></pre>	<pre><3.0 <2.0 <2.0 <2.0 </pre>	<pre><3.0 <2.0 <2.0 <2.0 </pre>	<pre><3.0 <2.0 <2.0 <2.0</pre>	

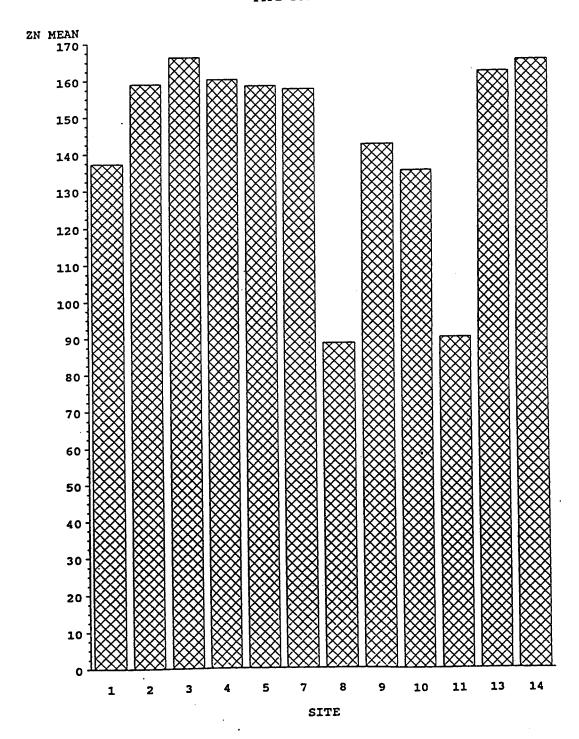


Figure II-17. Mean Zinc Concentrations in Soil from Sites 1 through 14.

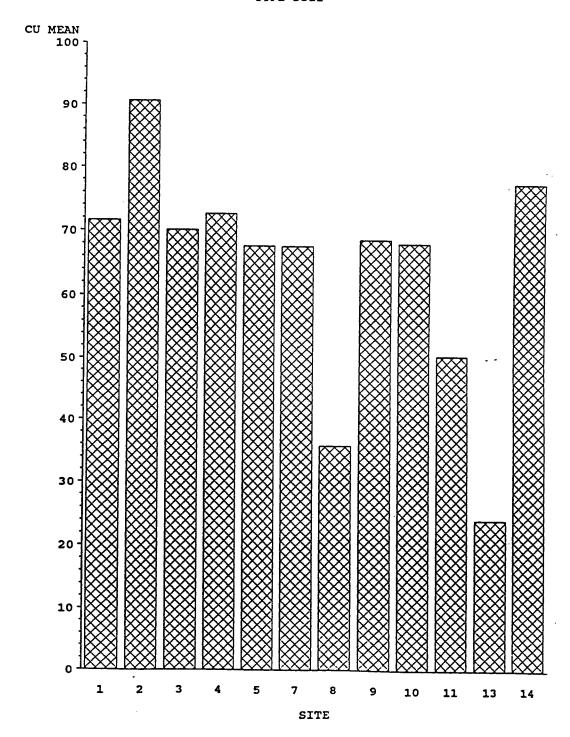


Figure II-18. Mean Copper Concentrations in Soil from Sites 1 through 14.

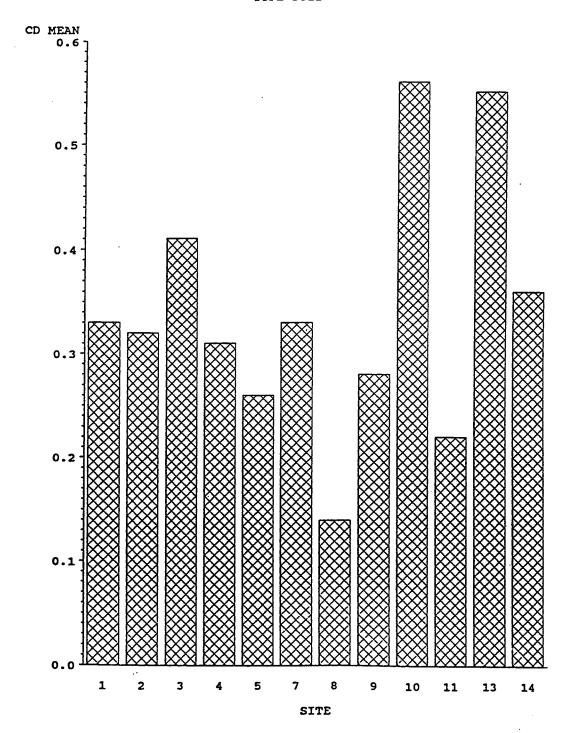


Figure II-19. Mean Cadmium Concentrations in Soil from Sites 1 through 14.



Figure II-20. Mean Arsenic Concentrations in Soil from Sites 1 through 14.

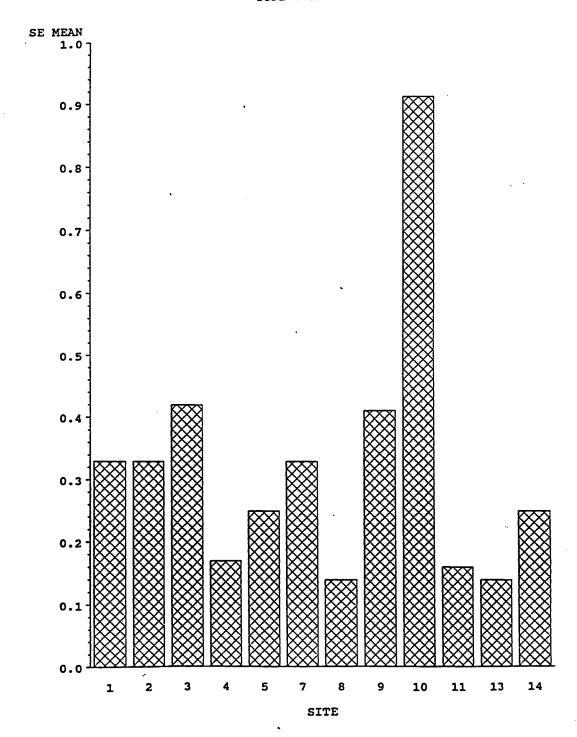


Figure II-21. Mean Selenium Concentrations in Soil from Sites 1 through 14.

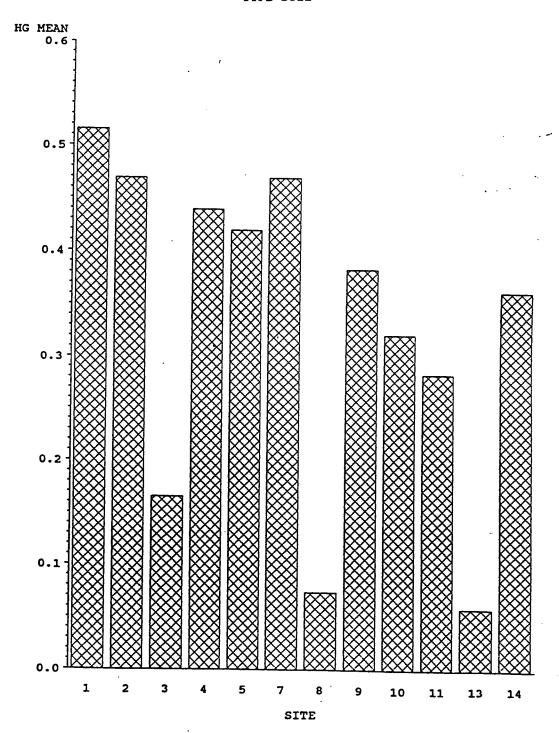


Figure II-22. Mean Mercury Concentrations in Soil from Sites 1 through 14.

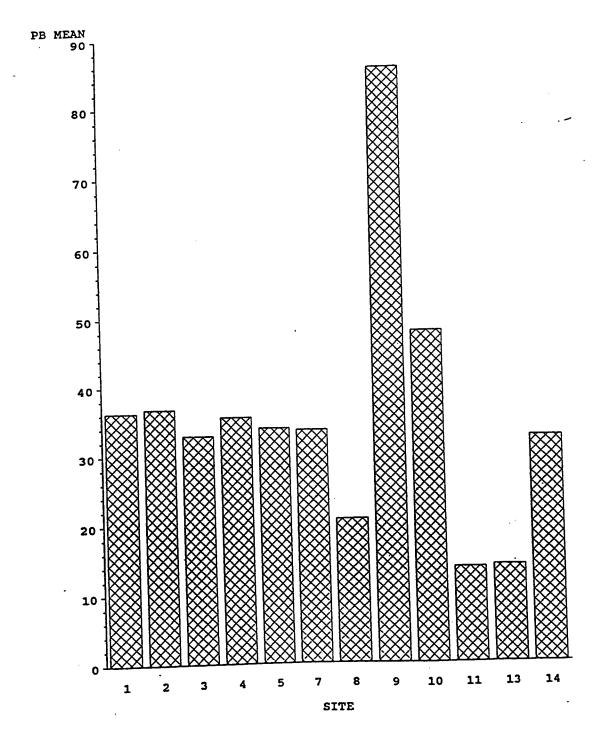


Figure II-23. Mean Lead Concentrations in Soil from Sites 1 through 14.

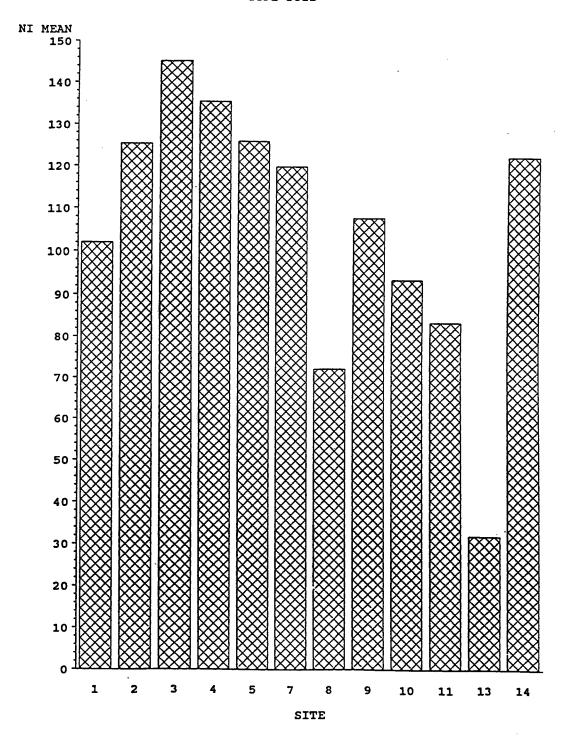


Figure II-24. Mean Nickel Concentrations in Soil from Sites 1 through 14.

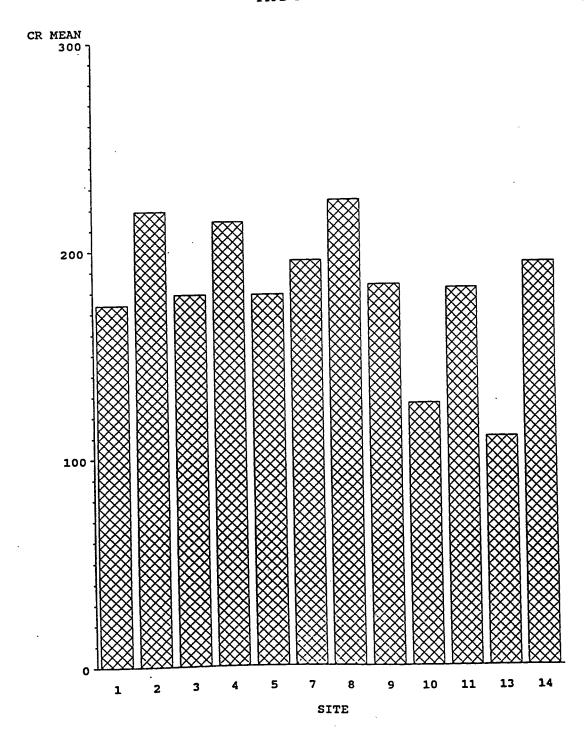


Figure II-25. Mean Chromium Concentrations in Soil from Sites 1 through 14.

MEAN OF ZN BY TYPE GROUPED BY SITE

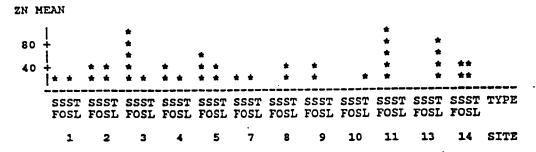


Figure II-26. Mean Zinc Concentrations of Plants, Spartina (SF), Salicornia (SO), Scirpus (SS), and Typha (TL) Grouped by Site.

MEAN OF CU BY TYPE GROUPED BY SITE

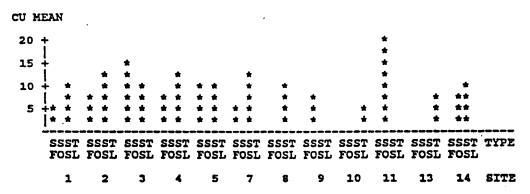


Figure II-27. Mean Copper Concentrations of Plants Spartina (SF), Salicornia (SO), Scirpus (SS), and Typha (TL) Grouped by Site.

MEAN OF CD BY TYPE GROUPED BY SITE

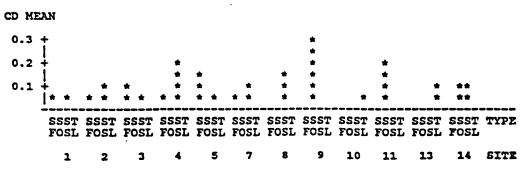


Figure II-28. Mean Cadmium Concentrations of Plants Spartina (SF), Salicornia (SO), Scirpus (SS), and Typha (TL) Grouped by Site.

MEAN OF AS BY TYPE GROUPED BY SITE

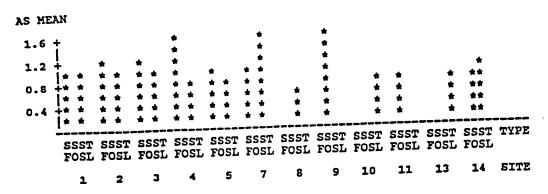


Figure II-29. Mean Arsenic Concentrations of Plants Spartina (SF), Salicornia (SO), Scirpus (SS), and Typha (TL) Grouped by Site.

MEAN OF SE BY TYPE GROUPED BY SITE

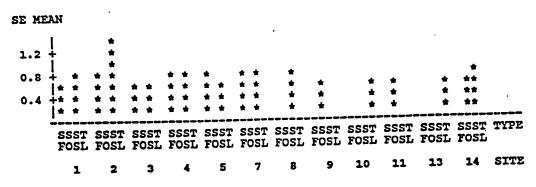


Figure II-30. Mean Selenium Concentrations of Plants Spartina (SF), Salicornia (SO), Scirpus (SS), and Typha (TL) Grouped by Site.

MEAN OF HG BY TYPE GROUPED BY SITE

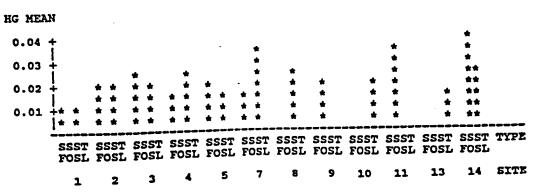


Figure II-31. Mean Mercury Concentrations of Plants Spartina (SF), Salicornia (SO), Scirpus (SS), and Typha (TL) Grouped by Site.

MEAN OF PB BY TYPE GROUPED BY SITE

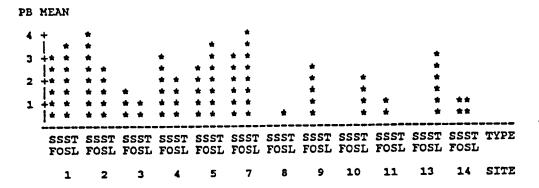


Figure II-32. Mean Lead Concentrations of Plants Spartina (SF), Salicornia (SO), Scirpus (SS), and Typha (TL) Grouped by Site.

MEAN OF NI BY TYPE GROUPED BY SITE

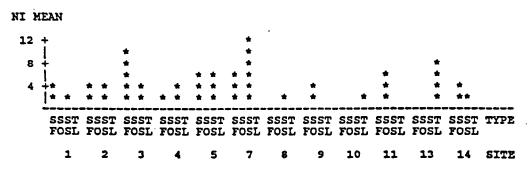


Figure II-33. Mean Nickel Concentrations of Plants Spartina (SF), Salicornia (SO), Scirpus (SS), and Typha (TL) Grouped by Site.

MEAN OF CR BY TYPE GROUPED BY SITE

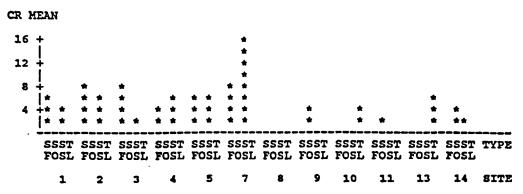


Figure II-34. Mean Chromium Concentrations of Plants Spartina (SF), Salicornia (SO), Scirpus (SS), and Typha (TL) Grouped by Site.

MEAN OF ZN BY TYPE GROUPED BY SITE

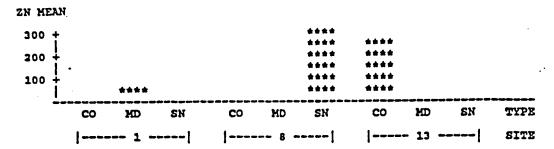


Figure II-35. Mean Zinc Concentrations of Organisms Corbicula (CO), Modiolus (MD), Nassarius (SN) Grouped by site.

MEAN OF CU BY TYPE GROUPED BY SITE

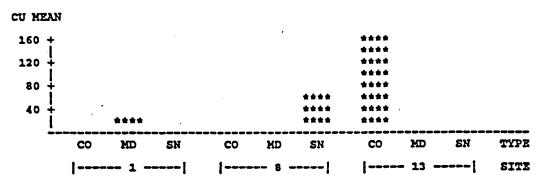


Figure II-36. Mean Copper Concentrations of Organisms Corbicula (CO), Modiolus (MD), Nassarius (SN) Grouped by site.

MEAN OF CD BY TYPE GROUPED BY SITE

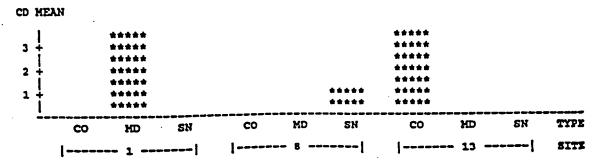


Figure II-37. Mean Chromium Concentrations of Organisms Corbicula (CO), Modiolus (MD), Nassarius (SN) Grouped by site.

MEAN OF AS BY TYPE GROUPED BY SITE

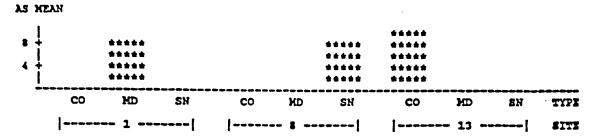


Figure II-38. Mean Arsenic Concentrations of Organisms Corbicula (CO), Modiolus (MD), Nassarius (SN) Grouped by site.

MEAN OF SE BY TYPE GROUPED BY SITE

SE MEAN 2 CO KD SN CO KD SN CO XD SX TYPE |------| |-----|-----| SITE

Figure II-39. Mean Selenium Concentrations of Organisms Corbicula (CO), Modiolus (MD), Nassarius (SN) Grouped by site.

MEAN OF HG BY TYPE GROUPED BY SITE HG MEAN 0.3 0.2 0.1 TYPE BX SH CO MD CO HD MD . SN CO |-----| SITT |----| |-----|

Figure II-40. Mean Mercury Concentrations of Organisms Corbicula (CO), Modiolus (MD), Nassarius (SN) Grouped by site.

MEAN OF PB BY TYPE GROUPED BY SITE

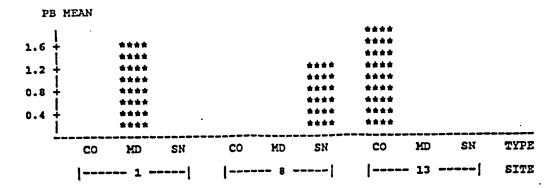


Figure II-41. Mean Lead Concentrations of Organisms Corbicula (CO), Modiolus (MD), Nassarius (SN) Grouped by site.

MEAN OF NI BY TYPE GROUPED BY SITE

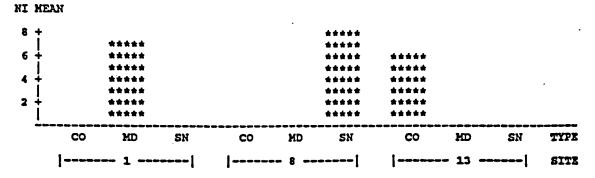


Figure II-42. Mean Nickel Concentrations of Organisms Corbicula (CO), Modiolus (MD), Nassarius (SN) Grouped by site.

MEAN OF CR BY TYPE GROUPED BY SITE

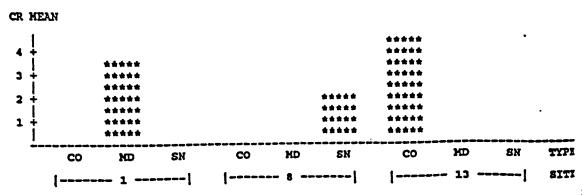


Figure II-43. Mean Chromium Concentrations of Organisms Corbicula (CO), Modiolus (MD), Nassarius (SN) Grouped by site.

Table II-7 Summary of Concentrations of Contaminants in Soils Under Field Conditions (Concentrations in mg/kg, dry-weight for metals, and ug/kg, wet-weight all others)

	Mar: Sites:			tuarine 9, 10, and 14		eshwater es: 11 - 13
<u>Metals</u>	Mean	Range	Mean	Range	Mean	Range
As	14.87	5.29 - 23.7	18.5	16.9 - 19.3	10.3	5.3 - 15.3
Cr	197.7	174.0 - 224.0	167.5	126.0 - 193.0	145.5	110.0 - 181.0
Cu	68.6	35.9 - 90.6	71.5	67.9 - 77.3	37.3	24.2 - 50.3
Ni	120.8	72.2 - 145.2	107.4	93.3 - 122.1	57.8	32.2 - 83.3
Pb	32.9	20.9 - 36.8	62.6	32.5 - 85.6	13.9	13.7 - 14.0
Se	0.28*	<0.14 - 0.42	0.49	0.25 - 0.91	0.15*	<0.14 - 0.16
Zn	146.67	88.5 - 166.1	146.9	135.0 - 164.7	125.8	89.8 - 161.7
Cd	0.30	0.33 - 0.41	0.37	0.28 - 0.56	0.39	0.22 - 0.55
Ħg	0.364	0.074 - 0.515	0.365	0.321 - 0.394	0.171	0.059 - 0.283
Butyltins						
Tetrabutyltin	1.76	<1.2 - 2.9	1.6	<1.3 - <1.9	<0.9\$	<0.9@
Tributyltin	2.57	2.0 - 3.1	3.4	3.2 - 3.6	17.6	1.8 - 33.4
Dibutyltin	3.01*	<1.4 - 89.6	4.3*	<1.6 - 9.6	<0.95	<0.9 [©]
Monobutyltin	3.83*	<1.3 - 17.0	3.1	2.1 - 4.7	<0.9 ^{\$}	<0.9 @
<u>PCBs</u>						
Aroclor 1016	<30 ^{\$}	<30 [®]	<36.7 ^s	<30 - <50	<30 ^{\$}	<30 ®
Aroclor 1221	<30 ^s	<30 °	<36.7 ^{\$}	<30 - <50	<30 ^s	<30 ©
Aroclor 1232	<30 ^s	<30 ®	<36.7 ^{\$}	<30 - <50	<30 ^s	<30 ®
Aroclor 1242	<30 ^s	<30°	<36.7 ^{\$}	<30 - <50	<30 ^{\$}	<30 [®]
Aroclor 1248	<30 ^s	<30 [®]	<36.7 ^{\$}	<30 - <50	<30 ^s	<30 ®
Aroclor 1254	93.3 ^{\$}	<30 - 210	<36.7 ^{\$}	<30 - <50	<30 ^s	<30 [®]
Aroclor 1260	<30 ^{\$}	<30 ®	<36.7 ^{\$}	<30 - <50	<30 ^{\$}	<30 [®]

[:] This mean contains at least one less than value.

Every variable in this set was this same value.

s: All values were less than detection limits.

Table II-7 Continued. Summary of Concentrations of Contaminants in Soils Under Field Conditions (Concentrations in ug/kg, wet-weight basis)

	Marin	e		arine		hwater
	Sites: 1			10, and 14		11 - 13
PAHs	Mean	Range	Mean	Range	<u>Mean</u>	<u>Range</u>
Acenaph- thene	10.3	<10 - 12	13.0	<10 - 19	<10 ^s	<10*
Acenaph- thylene	10.7*	<10 - 15	46.7*	<10 - 120	<10 ^{\$}	<10 [®]
Anthr- acene	16.3	<10 - 38	41.3*	<10 - 97	<10 ^{\$}	<10 [®]
Benzo [a] Anthracene	42.4	<10 - 100	72.3	11 - 150	19.5*	<10 - 29
Benzo [b] Fluoranthene	52.6	<10 - 96	104.0	18 - 211	14*	<10 - 18
Benzo [k] Fluoranthene	42.1	<10 - 82	76.7	13 - 150	15*	<10 - 20
Benzo [a] Pyrene	59.9*	130 - <10	69.3	16 - 130	16*	<10 - 22
Benzo [g,h,i] perylene	63.4"	<10 - 110	13.0*	<10 - 19	<10 ^{\$}	<10 ©
Chrysene	46.7*	<10 - 100	46.7*	<10 - 120	<10 ^{\$}	<100
Dibenzo [a,h] anthracene		<10 - 19	41.3	<10 - 97	<10 ^s	<10 [©]
Fluor- anthene	85.1*	<10 - 190	72.3	11 - 150	20	11 - 29
Fluorene	<10 ^{\$}	<10°	104.0	18 - 211	18	18*
Ideno-1,2,3- pyrene	55.1	<10 - 99	76.7	13 - 150	16.5	13 - 20
2-Methyl- Naphthalene	22.0	<10 - 30	NA	NA	NA	NA
Naphthalene	49.1	26 - 64	69.3	16 - 130	19	16 - 22
Phenan- threne	37.4*	<10 - 94	15.0*	<10 - 20	16.5	13 - 20
Pyrene	108.9*	<10 - 240	28.0*	<10 - 46	39.5	33 - 46

<sup>This mean contains at least one less than value.
Every variable in this set was this same value.
All values were less than detection limits.
NA: Not available.</sup>

Table II-7 Concluded. Summary of Concentrations of Contaminants in Soils Under Field Conditions (Concentrations in ug/kg, wet-weight basis)

	Marin			uarine		shwater
	Sites: 1			, 10, and 14	Sites	: 11 - 13
Pesticides	<u>Mean</u>	Range	Mean	Range	<u>Mean</u>	Range
Aldrin	<3.0 ^{\$}	<3.0°	<3.7 ^s	<3.0 - <5.0	<3.0\$	<3.00
a-BHC	<3.0 ^s	<3.00	<3.7 ^{\$}	<3.0 - <5.0	<3.0 ^{\$}	<3.0°
b-BHC	<3.0 ^{\$}	<3.0°	<3.7 ^s	<3.0 - <5.0	<3.0 ^s	<3.0°
d-BHC	<3.0 ^s	<3.0°	<3.7 ^s	<3.0 - <5.0	<3.0 ^{\$}	<3.00
g-BHC	<3.0 ^{\$}	<3.00	<3.75	<3.0 - <5.0	<3.0°	<3.00
Chlordane	<3.0 ^{\$}	<3.00	<3.7 ^s	<3.0 - <5.0	<3.0 ^{\$}	<3.00
4,4-DDD	<3.0 ^{\$}	<3.00	<3.7 ^s	<3.0 - <5.0	<3.0 ^{\$}	<3.04
4,4-DDE	<3.0 ^{\$}	<3.00	<3.7 ^{\$}	<3.0 - <5.0	<3.0 ^{\$}	<3.00
4,4-DDT	<3.0°	<3.0	' <3.7 ^{\$}	<3.0 - <5.0	<3.0 ^s	<3.0°
Dieldrin	<3.0 ^{\$}	<3.0°	<3.7 ^{\$}	<3.0 - <5.0	<3.0 ^{\$}	<3.0 [©]
Endosulfan I	<3.0 ^{\$}	<3.0°	<3.75	<3.0 - <5.0	<3.0°	<3.0 [©]
Endosulfan II	<3.0 ^{\$}	<3.0°	<3.7 ^s	<3.0 - <5.0	<3.0 ^s	<3.0°
Endosulfan sulfate	<3.0 ^{\$}	<3.0♥	<3.7 ^{\$}	<3.0 - <5.0	<3.0 ^s	<3.00
Endrin	<3.0 ^{\$}	<3.0°	<3.7 ^s	<3.0 - <5.0	<3.0 ^s	<3.0°
Endrin Aldehyde	<3.0 ^{\$}	<3.0 [®]	<3.7 ^{\$}	<3.0 - <5.0	<3.05	<3.0°
Heptachlor	<3.0 ^{\$}	<3.0°	<3.75	<3.0 - <5.0	<3.0 ^{\$}	<3.0°
Reptachlor Epoxide	3.09*	3.6 - <3.0	<3.7 ^{\$}	<3.0 - <5.0	<3.0\$	<3.0€
Methoxychlor	<3.0 ^{\$}	<3.0°	<3.75	<3.0 - <5.0	<3.0\$	<3.0 [©]
Foxaphene	<115.6° <	200 - <3.0	<4.0 ^{\$}	<3.0 - <5.0	<3.05	<3.0°
Toxaphene	<115.6° <	200 - <3.0	<4.0 ^{\$}	<3.0 - <5.0	<3.0 ^s	<3.0 ⁶

[:] This mean contains at least one less than value.
: Every variable in this set was this same value.
: All values were less than detection limits.

Table II-8 Summary of Concentrations of Contaminants in Plants Under Field Conditions (Concentrations in ug/kg, dry-weight basis)

				77-4-4		Fres	hwater
		Mar	ine		narine), 10, and 14		: 11 - 13
		Sites	s: 1 - 8	Sites: S	, 10, and 14	02000	
			Dango	Mean	Range	Mean	Range
	•	<u>Mean</u>	<u>Range</u>	<u>rican</u>	2142199		
Meta	als						
	gtino	1.14*	<0.86 - 1.82	NA	NA	NA	NA
AS:	Spartina Salicornia	0.91	<0.003 - 2.20	<0.945	<0.92 - <0.95	NA	NA
	-	NA	NA	<1.46 ^s	<0.71 - <4.2		0.79 - <0.87
	Scirpus	NA	NA	<0.815	<0.77 - <0.87	<0.88\$ <	0.83 - < 0.91
	Typha	IIA	•1• •	•••			
6	Spartina	6.65	2.5 - 8.9	NA	NA	NA	NA
CI:	Salicornia	4.99	0.4 - 25.4	2.65	1.7 - 3.6	NA	NA
		NA	NA	4.34"	3.3 - 6.4	2.33	0.7 - 4.0
	Scirpus	NA	NA	<3.65°	<3.4 - <4.1	5.83	<4.0 - 8.0
	Typha	MA	111.				
<i>~</i>	Spartina	8.05	4.35 - 13.9	NA	NA	NA	. NA
Cu:	Salicornia	10.7	6.52 - 19.1	10.75	10.1 - 11.4	NA	NA
	Scirpus	NA	NA	7.36	5.52 - 10.13	19.4	13.6 - 31.1
	Typha	NA	NA	6.14	4.06 - 10.18	6.53	4.0 - 9.41
	-7P						474
Ni:	Spartina	5.20	1.96 - 9.29	NA	NA	NA	NA
	Salicornia	4.45*	<0.93 - 19.20	2.82	1.85 - 3.78	NA	NA
	Scirpus	NA	NA	3.93	1.97 - 4.26	6.59	4.47 - 9.39
	Typha	NA	NA	2.41	2.16 - 2.64	5.35	4.27 - 9.40
		_			475	NA	NA
Pb:	Spartina	2.81	0.60 - 4.90	NA	AN O 71 O 00	NA	NA
	Salicornia	2.07	0.23 - 5.40	0.85	0.71 - 0.99	0.79	0.49 - 1.03
	Scirpus	NA	NA	2.04	1.18 - 2.50 <1.9 - 2.19	2.8	<2.1 - 4.0
	Typha	NA	NA	2.05	<1.9 - 2.19	2.0	72.1 - 1.0
	_		.0 .0 0.0	117	NA	NA	NA
Se:	Spartina	0.73	<0.63 - 0.85	NA <0.70 -		NA	NA
	Salicornia		$<0.63 - <2.20^{\circ}$	<0.70 -		<0.61\$	<0.56 - <0.6
	Scirpus	NA	NA	<0.65 ^{\$}		<0.63	<0.62 - <0.6
	Typha	NA	NA	<0.65	70.03 - 70.03	40.00	
_		45 7	21.2 - 98.0	NA	NA	NA.	NA
zn:	Spartina	45.7 30.6	12.04 - 57.4	30.3	29.8 - 30.8	NA	NA
	Salicornia	NA	12.04 - 57.4 NA	40.1	27.2 - 48.4	92.7	59.3 - 133.
	Scirpus	NA NA	NA NA	19.2	17.8 - 19.0	71.9	34.3 - 98.8
	Typha	ME	•14.				
ca.	Spartina	0.076	0.032 - 0.22	NA	NA	NA	NA
cu.	Salicornia		0.05 - 0.29	0.12	0.07 - 0.17	NA	NA
	Scirpus	NA	NA	0.24	0.08 - 0.37	0.18	0.13 - 0.24
	Typha	NA	NA	0.064	0.035 - 0.100	0.11	0.07 - 0.14
	4.					***	MA
Hg:	Spartina	0.016	0.008 - 0.027	NA	NA	NA NA	NA NA
-	Salicornia		0.01 - 0.038	0.027	0.019 - 0.034	NA 0 035	0.018 - 0.0
	Scirpus	NA	NA	0.024	0.012 - 0.038	0.035 0.014	0.010 - 0.0
	Typha	NA	NA	0.019	0.012 - 0.026	0.014	0.010 - 0.0

This mean contains at least one less than value.

Every variable in this set was this same value.

All values were less than detection limits.

NA: Not applicable. No plants of this species at this site.

Table II-8 Continued. Summary of Concentrations of Contaminants in Plants Under Field Conditions (Concentrations in ug/kg, wet-weight)

		rine		arine	_	shwater
	Sites	s: 1 - 8	Sites: 9), 10, and 14	Site	s: 11 - 13
Dukas14 /	Mean	Range	Mean	Range	Mean	Range
Butyltins						
Tetrabutyltin:						
Spartina		<2.1 - 2.7	NA	NA	NA	NA
Salicornia		<1.6 - 54.7	2.75	<3.1 - 2.4	NA	NA
Scirpus	NA	NA	3.88	1.2 - 6.1	3.93	1.2 - 5.5
Typha	NA	NA	8.7	2.2 - 11.4		<3.2 - 18.3
Fributyltin:						
Spartina	4.82	<2.5 - 9.2	NA	NA	***	
Salicornia	7.51	<1.8 - 35.8		NA A A A	NA	NA
Scirpus			4.6	4.4 - 4.8	NA	NA
-	NA	NA	8.02	2.2 - 14.7	4.97	2.2 - 5.6
Typha	NA	NA	4.13	2.2 - 5.7	5.78*	<3.6 - 8.4
Dibutyltin:						
Spartina	3.07	<2.1 - 3.7	NA	NA	NA	NA
Salicornia	5.18*	<1.4 - 13.2	2.6*	<3.0 - 2.2	NA NA	
Scirpus	NA	NA	3.78*	<2.9 - 6.7		NA
Typha	NA	NA NA	3.0	2.5 - 3.7	3.43	1.1 - 5.6
	****	5121	3.0	2.3 - 3./	3.45*^	2.3 - 4.4
Monobutyltin:	4 502					
Spartina			NA	NA	NA	NA
Salicornia	15.6	<1.3 - 64.3	20.35	5.6 - 35.1	NA	NA
Scirpus	NA	NA	4.2	<2.9 - 5.0	5.87*	<3.7 - 9.5
Typha	NA	NA	7.45	<2.2 - 14.0	4.7	<3.0 - 7.0
<u>PCBs</u>						
Aroclor 1016						
Spartina	<73.3 ^{\$}	<20 - <100	NA	NA	NA	NA
Salicornia	<55.0 ^{\$}	<20 - <100	NA	NA NA	NA NA	
Scirpus	NA	NA NA	<1005	<100 [®]	<20 ^{\$}	NA
Typha	NA	NA NA	<100 ^s	<100°		<200
		4164	~100	-100 -	<100 ^{\$}	<100
roclor 1221						
Spartina			NA	NA	NA	NA
Salicornia	<55.0 ^{\$}	<20 - <100	NA	NA	NA	NA
Scirpus	NA	NA	<100 ⁵	<1000	<20 ^{\$}	<20°
Typha	NA	NA	<100 ^{\$}	<1000	<100 ^s	<100°
roclor 1232						
Spartina	<73.3 ^{\$}	<20 - <100	NA	NA	NA	NTN
Salicornia	<55.0 ^{\$}	<20 - <100	NA NA	NA NA		NA
Scirpus	NA	NA	<100 ⁵	<1000	NA <20 ^{\$}	NA
Typha	NA	NA	<100 ^s	<100°	<100 ^{\$}	<200
-25		••••	-100	-100-	-100 .	<100 °

This mean contains at least one less than value.

^{• :} Every variable in this set was this same value.

[:] All values were less than detection limits. : Indicates analyte detected in the blank.

NA: Not applicable. No plants of this species at these sites.

Table II-8 Continued. Summary of Concentrations of Contaminants in Plants Under Field Conditions (Concentrations in ug/kg, wet-weight)

	27-	rino	Estu	arine		water
		rine es: 1 - 8		, 10, and 14	Sites	: 11 - 13
	2166	O			No	Banco
	Mean	Range	<u>Mean</u>	Range	<u>Mean</u>	Range
<u>PCBs</u>						
Aroclor 1242						4.0
Spartina	<73.3 ^s	<20 - <100	NA	NA	NA	NA
Salicornia	<55.0°	<20 - <100	NA	NA	NA	NA
Scirpus	NA	NA	<100 ^s	<100°	<20 ^s	<20°
	NA	NA	<100 ^s	<100°	<100 ^{\$}	<100°
Typha	IIA	••••				
Aroclor 1248	_ •		273	NA	NA	NA
Spartina	<73.3 ^s	<20 - <100	NA		NA	NA
Salicornia	<60 ^s	<20 - <100	NA	NA	<20 ^{\$}	<20 6
Scirpus	NA	NA	<100 ^s	<1000	<100 ^s	<1000
Typha	NA	AN	<100 ^s	<100 [®]	~100 .	~100
Aroclor 1254						
Spartina	<73.3 ^s	<20 - <100	NA	NA	NA	NA
Salicornia	<60 ⁵	<20 - <100	NA	NA	NA	NA
	NA	NA	.<100 ^{\$}	<100°	<20 ^{\$}	<20°
Scirpus		NA	<100°	<1000	<100 ^s	<100 °
Typha	NA	MA	-100			
Aroclor 1260	_			***	NA	NA
Spartina	<73.3 ^s	<20 - <100	NA	NA	NA NA	NA
Salicornia	<60 ^{\$}	<20 - <100	NA	NA	<20 ⁵	<20 [©]
Scirpus	NA	NA	<100 ^s	<1000	<100 ^{\$}	<100°
Typha	NA	NA	<100 ^s	<100°	<100°	~100 -
<u>PAHs</u>						
Acenaphthene		_			27%	NA
Spartina	<10 ^s	<10°	NA	NA	AN	NA NA
Salicornia	<10 ^s	<100	<10\$	<100	NA	<10°
Scirpus	NA	NA	<10 ^s	<100	<10 ^{\$}	<10°
Typha	NA	NA	<10\$	<10°	<10 ^{\$}	710 2
Acenaph-						
thylene						278
Spartina	<10 ^s	<10°	NA	NA	NA	NA
Salicornia	<10 ^s	<10°	<10 ^s	<100	NA	NA <10 °
Scirpus	NA	NA	<10 ^s	<100	<10 ^{\$}	
Typha	NA	NA	<10 ⁵	<100	<10 ^{\$}	<10 °
Anthracene						
Spartina	11.3*	<10 - 26	NA	NA	NA	NA
Salicornia	<10 ^s	<10°	<10 ^{\$}	<10 [©]	NA	NA
Salicolnia Scirpus	NA	NA	<10 ^s	<10°	<10 ^s	<100
		NA	<10\$	<10 [©]	<10 ^{\$}	<10°
Typha	NW	4444				

This mean contains at least one less than value.

Every variable in this set was this same value.

All values were less than detection limits.

NA: Not applicable. No plants of this species at these sites.

Table II-8 Continued. Summary of Concentrations of Contaminants in Plants Under Field Conditions (Concentrations in ug/kg, wet-weight)

	Ma	rine	Esti	arine	Fres	hwater
		s: 1 - 8), 10, and 14		: 11 - 13
	Mean	Range	Mean	Range	Mean	Range
PAHs						
Benzo [a]						
Anthracene						
Spartina	<10 ⁵	<100	NA	NA	NA	NA
Salicornia	<10 ^s	<100	<10 ^{\$}	<100	NA	NA
Scirpus	NA	NA	<10 ^{\$}	<100	<10 ^s	<100
Typha	NA	NA	<10 ^s	<10@	<10 ^{\$}	<10@
Benzo [b]						
Fluoranthene						
Spartina	<10 ^s	<100	NA	NA	NA	NA
Salicornia	<10 ^{\$}	<100	<10 ^s	<100	NA	NA
Scirpus	NA	NA	<10 ^{\$}	<100	<10\$	<10@
Typha	NA	NA	<10 ^s	<100	<10 ^s	<100
Benzo [b]						
Fluoranthene						
Spartina	<10 ^s	<100	NA	NA	NA	NA
Salicornia	<10 ^s	<100	′ <10 ^s	<100	NA NA	NA NA
Scirpus	NA	NA	<10 ^s	<10@	<10 ^{\$}	<10 [@]
Typha	NA	NA	<10 ^s	<100	<10 ^s	<10°
Benzo [k] Fluoranthene						
Spartina	<10 ^{\$}	<100	NA	NA	NA	NA
Salicornia	<10 ^s	<100	<10 ^s	<100	NA	NA NA
Scirpus	NA	NA	<10 ^s	<100	<10 ^s	<100
Typha	NA	NA	<10 ^s	<100	<10 ^s	<10
Benzo [a]						
Pyrene						
Spartina	<10 ^{\$}	<10 [©]	NA	NA	NA	NA
Salicornia	<10\$	<10	<10 ^s	<100	NA.	NA
Scirpus	NA	NA	<10 ⁵	<100	<10 ⁵	<10°
Typha	NA	NA	<10 ^s	<10	<10 ^s	<10
Benzo [g,h,i]						
perylene						
Spartina	<105	<10 ⁶	NA	NA	NA	NA
Salicornia	<105	<100	<10 ^s	<100	NA	NA
Scirpus	NA	NA	<10 ^s	<100	<10 ^s	<106
Typha	NA	NA	<10\$	<100	<10 ^s	<100
hrysene						
Spartina	<10 ^s	<100	NA	NA	NA	NA
Salicornia	<10 ^s	<100	<10 ^s	<100	NA	NA NA
Scirpus	NA	NA	<105	<10	<10 ⁵	<10 [©]
SCTIDUS						

[:] This mean contains at least one less than value.

Every variable in this set was this same value.

s: All values were less than detection limits.

NA: Not applicable/Not available. No plants of this species at these sites.

Table II-8 Continued. Summary of Concentrations of Contaminants in Plants Under Field Conditions (Concentrations in ug/kg, wet-weight)

	Ma	rine	Estua	arine		water
		s: 1 - 8		, 10, and 14	Sites	11 - 13
			Waan	Range	Mean	Range
	<u>Mean</u>	Range	Mean	Kange		
pibenzo [a,h]						
anthracene	•		NA	NA	NA	NA
Spartina	<10 ^s	<10 [®]	<10 ^{\$}	<100	NA	NA
Salicornia	<10 ^{\$}	<10 [©]	<10,	<10 [©]	<10 ^s	<100
Scirpus	NA	NA	<10 ^s		<10 ⁵	<100
Typha	NA	NA	<10 ^{\$}	<100	/10	~10
luoranthene					NA	NA
Spartina	<10 ^s	<10 [©]	NA	NA		
Salicornia	10.06	<10 - 11	<10 ^s	<10 [®] _	NA	NA
Scirpus	NA	NA	<10 ^{\$}	<10 [©]	<10 ^s	<100
Typha	NA	NA	<10 ^s	<100	<10 ^{\$}	<10 [©]
Fluorene						375
Spartina	10.42	<10 - 15	NA	NA	NA	NA
Salicornia	10.06	<10 - 11	<10 ^s	<10@	NA	NA
	NA	NA	<10 ^s	<100	<10 ^s	<10°
Scirpus		NA NA	<10 ^s	<100	<10 ^s	<100
Typha	NA	NV				
Indeno-1,2,3-	•					
pyrene	<10 ^{\$}	<100	NA	NA	NA	NA
Spartina	<10 ^s	<100	<10 ^s	<100	NA	NA
Salicornia			<10 ^s	<100	<10 ^{\$}	<10 °
Scirpus	NA	NA	<10 ^s	<100	<10 ^s	<10°
Typha	NA	NA	<10	720		
2-Methyl-						
Naphthalene	04 03*	-20 22	NA	NA	NA	NA
Spartina	24.83	<20 - 32		NA	NA	NA
Salicornia	24.31*	<20 - 37	AN	NA	NA	NA
Scirpus	NA	NA	NA		NA	NA
Typha	NA	NA	NA	NA	, MEZ	2422
Naphthalene		00	313	NA	NA	NA
Spartina	56.17	28 - 88	NA <10 ⁵	<100	NA	NA
Salicornia	57.31	16 - 98	<102	<10°	<10 ^s	<10
Scirpus	NA	NA	<10 ^s	<10°	<10 ^s	<100
Typha	NA.	NA	<10 ^s	<10-	~10	
Phenanthrene	_		***	NA	NA	NA
Spartina		<10 - 31	NA		NA NA	NA
Salicornia		<10 - 37	<10 ^s	<100		10 - 18
Scirpus	NA	NA	14.8	<10 - 18	15	<10 - 18
Typha	_	NA	12.75*	<10 - 20	12.5*	<10 - 19
Pyrene		•		•••	RVR	NA
Spartina	10.17	<10 - 12	NA	NA	NA	
Salicornia	10.13	<10 - 12	<10 ^s	<100	NA	NA
Scirpus		NA NA	<10 ^s	<100	<10 ^s	<100
Typha		NA	<10 ^{\$}	<10 °	<10 ^{\$}	<10°

^{*:} This mean contains at least one less than value.

* Every variable in this set was this same value.

* All values were less than detection limits. NA: Not applicable.

Table II-8 Continued. Summary of Concentrations of Contaminants in Plants Under Field Conditions (Concentrations in ug/kg, wet-weight)

	N	Marine	Estu	arine	Fres	hwater
		es: 1 - 8		, 10, and 14	Sites	: 11 - 13
Pesticides	Mean	Range	Mean	Range	Mean	Range
Aldrin:	-9.48	10.0 100	***	***	***	***
Spartina	<14 ^s	<2.0 - <20	NA <2.0 ^{\$}	NA <2.0 [©]	NA	NA
Salicornia	<11 ⁵	<2.0 - <20	<2.0°	<2.0°	NA <2.0 ^s	NA <2.0 [©]
Scirpus	NA	NA NA	<2.0	<2.0	<2.0°	<2.0°
Typha	NA	NA	<20	<20	\2 0°	<200
a-BHC:						
Spartina	_	<2.0 - <20	NA	NA	NA	NA
Salicornia	11.02	<2.0" - 2.3	<2.05	<2.00	NA	NA
Scirpus	NA	NA	<2.0 ^s	<2.00	<2.0 ^s	<2.00
Typha	NA	NA	<20	<20	<20 ^{\$}	<20°
-BHC:						
Spartina	<145	<2.0 - <20	NA	NA	NA	NA
Salicornia	<115	<2.0 - <20	<2.0 ^s	<2.0	NA	NA
Scirpus	NA	NA	<2.0 ^{\$}	<2.0 [@]	<2.0 ^s	<2.0°
Typha	NA	AN	<20	<20	<20 ^s	<20 [©]
i-BHC:			•			
Spartina	<14 ^s	<2.0 - <20	NA	NA	NA	NA
Salicornia	<115	<2.0 - <20	<2.0 ^{\$}	<2.0 [@]	NA	NA
Scirpus	NA	NA	<2.0 ^{\$}	<2.0 [©]	<2.0 ^{\$}	<2.0 [@]
Typha	NA	NA	<20	<20	<20 ^{\$}	<20 [@]
g-BHC:						
Spartina	<14 ^s		NA	NA	NA	NA
Salicornia	<11 ^s	<2.0 - <20	<2.0 ^{\$}	<2.0	NA	NA
Scirpus	NA	NA	<2.0 ^s	<2.0°	<2.0 ^{\$}	<2.0°
Typha	NA	NA	<20	<20	<20 ^{\$}	<20 °
Chlordane:	_					
-		<2.0 - <30	NA	NA	NA	NA
Salicornia	<16 ^{\$}	<2.0 - <30	<2.0 ^s	<2.00	NA	NA
Scirp us	NA	NA	<2.0 ^{\$}	<2.0 [®]	<2.0 ^s	<2.0°
Typha	NA	NА	<20	<20	<20 ^{\$}	<20 ©
4,4-DDD:	_					
Spartina	<14 ^s	<2.0 - <20	NA	NA	NA	NA
Salicornia	<11 ⁵	<2.0 - <20	<2.0 ^s	<2.0°	NA	NA
Scirpus	NA	NA	<2.0 ^s	<2.0	<2.0 ^{\$}	<2.0 [©] _
Typha	NA	AN	<20	<20	<20 ^{\$}	<20 [©]
1,4-DDE:	•					
Spartina	<14 ^s	<2.0 - <20	NA	NA	NA	NA
Salicornia	<115	<2.0 - <20	<2.0 ^s	<2.00	NA	NA
Scirpus	NA	NA	<2.0 ^{\$}	<2.0 [®]	<2.0 ^{\$}	<2.0 @
Typha	NA	NA	<20	<20	<20 ^{\$}	<20 [©]

This mean contains at least one less than value.

[:] Every variable in this set was this same value.

All values were less than detection limits.

^{*:} There was a less than value much higher than this highest actual number. NA: Not applicable/Not available. No plants of this species in these sites.

Summary of Concentrations of Contaminants in Plants Under Field Conditions (Concentrations in ug/kg, wet-weight) Table II-8 Continued.

		arine	Estua	rine		water
		es: 1 - 8	Sites: 9,	10, and 14	Sites:	11 - 13
			Mean	Range	Mean	Range
	Mean	Range	<u> </u>			
<u>Pesticides</u>						-
4,4-DDT:		12.0	NA	NA	NA	NA
Spartina		<2.0 - <20	<2.0 ^{\$}	<2.0°	NA	NA
Salicornia	<11 ⁵	<2.0 - <20	<2.0 ⁵	<2.00	<2.0 ^s	<2.0°
Scirpus	NA	NA		<20	<20 ^s	<20°
Typha	NA	NA	<20	~20		
Dieldrin:					NA	NA
Spartina	<14 ^{\$}	<2.0 - <20	NA	NA		NA
Salicornia	<115	<2.0 - <20	<2.0 ^s	<2.00	NA <2.0 ^s	<2.0°
Scirpus	NA	NA	<2.0 ^s	<2.00	<2.0°	<20°
Typha	NA	NA	<20	<20	<20°	720-
Endosulfan I	:				474	NTA
Spartina -	<145	<2.0 - <20	NA	NA	NA	NA
Salicornia	11.02	<2.0" - 2.3	<2.0 ^s	<2.00	NA	NA
Scirpus	NA	NA	. <2.0 ^{\$}	<2.0 [©]	<2.0 ^{\$}	<2.00
Typha	NA	NA	<20	<20	<20 ^{\$}	<20 [©]
Typna	•					
Endosulfan I	I: <14 ⁵	<2.0 - <20	AN	NA	NA	NA
Spartina		<2.0 - <20	<2.0 ^s	<2.0 [©]	NA	NA
Salicornia	<11 ⁵	NA	<2.0°	<2.0°	<2.0 ^s	<2.0 ⁴⁰
Scirpus	NA	NA NA	<20	<20	<20 ^s	<20 [©]
Typha	NA	MA	-20			
Endosulfan						
sulfate		-2 0 -20	NA	NA	NA	NA
Spartina		<2.0 - <20 <2.0 - <20	<2.0 ^{\$}	<2.00	NA	NA
Salicornia	<11 ⁵	NA	<2.0 ^s	<2.00	<2.0 ^{\$}	<2.0°
Scirpus	NA		<20	<20	<20 ^s	<20 °
Typha	NA	NA	~~~	- 	••	
Endrin:	•		272	NA	NA	NA
Spartina	<145		NA <2.0 ^{\$}	<2.0°	NA	NA
Salicornia	<115	<2.0 - <20	<2.U°	<2.00	<2.0 ^s	<2.0 °
Scirpus	NA	NA	<2.0 ^s	<20	<20 ^{\$}	<20°
Typha	NA	NA	<20	~20	720	
Endrin						
Aldehyde:	_		472	NA	NA	NA
<i>Spartina</i>	<145	<2.0 - <20	NA	NA <2.0	NA	NA
Salicornia	<11 ^s	<2.0 - <20	<2.0 ^s	<2.0°	<2.0 ^s	<2.0°
Scirpus	NA	NA	<2.0 ^{\$}	<2.0	<20 ^s	<20°
Typha	NA	NA	<20	~20	720	

<sup>Every variable in this set was this same value.
All values were less than detection limits.
NA: Not applicable/Not available. No plants of this species at these sites.</sup>

Table II-8 Concluded. Summary of Concentrations of Contaminants in Plants Under Field Conditions (Concentrations in ug/kg, wet-weight)

		Marine	Estu	arine	Fres	hwater
	Si	tes: 1 - 8	Sites: 9	, 10, and 14	Sites	: 11 - 13
	Mea	n Range	Mean	Range	Mean	Range
<u>Pesticide</u>	<u>:5</u>					
eptachlor:						
Spartina	<14 ^{\$}	<2.0 - <20	NA	NA	NA	NA
alicornia	<11 ^{\$}	<2.0 - <20	<2.0 ^{\$}	<2.0 [®]	NA	NA
Scirpus	NA	NA	<2.0 ^{\$}	<2.0 [©]	<2.0 ^{\$}	<2.0°
Typha	NA	NA	<20	<20	<20 ^s	<20 [®]
eptachlor						
Epoxide						
Spartina	<14 ^s	<2.0 - <20	NA	NA	NA	NA
alicornia	<115	<2.0 - <20	<2.0 ^{\$}	<2.0°	NA	NA
Scirpus	NA	NA	<2.0 ^{\$}	<2.0 [®]	<2.0 ^{\$}	<2.0 ⁴⁹
Typha	NA	NА	<20	<20	<20 ^s	<20 [®]
ethoxychlo	r:					
Spartina	<14 ^{\$}	<2.0 - <20	NA	NA	NA	NA
alicornia	<115	<2.0 - <20	<2.0 ^s	<2.00	NA	NA
Scirpus	NA	NA	<2.0°	<2.00	<2.0 ^s	<2.0 [®]
Typha	NA	NA	<20	<20	<20 ^s	<20 [©]
oxaphene:						
Spartina			NA	NA	NA	NA
alicornia	<80.75 ^{\$}	<2.0 - <200	NA	NA	NA	NA
Scirpus	NA	NA	<2.0 ^s	<2.00	<2.0 ^s	<2 . 0 [©]
Typha	NA	NA	<20	<20	<20 ^s	<20 [©]

[:] This mean contains at least one less than value.

^{• :} Every variable in this set was this same value.

[:] All values were less than detection limits.

In this range there was a less than value much higher than this highest actua value.

NA: Not applicable/Not available. No plants of this species at these sites.

Table II-9 Summary of Concentrations of Contaminants in Animals Under Field Conditions (Concentrations in mg/kg metals and ug/kg butyltins)

	- 1/0	-ino	Estu	arine	Fres	hwater
		rine s: 1 - 8	Sites: 9	, 10, and 14	Sites	: 11 - 13
	Sites	5: 1 = 0	02002	<u> </u>		
	Mean	Range	Mean	Range	<u>Mean</u>	Range
<u>etals</u>	2.00					
CULLE				473	NA	NA
s: Modiolus	8.85	8.76 - 8.93	NA	NA	NA	NA
Cerithidea	7.78	2.5 - 11.62	NA	NA	10.79	10.79
Corbicula	NA	NA	NA	NA	10.79	10.73
			27.2	NA	NA	NA
r: Modiolus	3.65	3.3 - 4.0	NA	NA NA	NA	NA
Cerithidea	1.83	1.2 - 2.2	NA		4.3	4.30
Corbicula	NA	NA	NA	NA	4.5	1.0
			NA	NA	NA	NA
u: Modiolus	21.85	20.5 - 23.1		NA	NA	NA
Cerithidea	63.8	23.5 - 93.6	NA		164.1	164.10
Corbicula	NA	NA	NA	NA	104.1	20412
		5 00 7 74	NA	NA	NA	NA
li: Modiolus	6.54	5.33 - 7.74		NA NA	NA	NA
Cerithidea	7.73	4.5 - 10.2	NA		5.78	5.78 [@]
Corbicula	NA	NA	NA	NA	3.70	
		1 20 1 71	· NA	NA	NA	NA
b: Modiolus	1.55	1.39 - 1.71	NA NA	NA	NA	NA
Cerithidea	1.22	0.82 - 1.43		NA NA	1.89	1.890
Corbicula	NA	NA	AN	IAV	2.07	
	2.06	3.52 - 4.19	NA	NA	NA	NA
Se: Modiolus	3.86	1.04 - 1.47	NA	NA	NA	NA
Cerithidea	1.28		NA NA	NA	3.98	3.98 °
Corbicula	NA	NA	MW	4744		
	71.4	71.1 - 71.7	NA	NA	NA	NA
Zn: Modiolus		131.4 - 309	NA	NA	NA	NA
Cerithidea	280.5		NA	NA	273.0	273.0°
Corbicula	NA	NA	2123	••••		
	3.49	3.45 - 3.53	NA	NA	NA	NA.
Cd: Modiolus		0.34 - 1.03	NA	NA	NA	NA
Cerithidea	0.80	0.34 - 1.03 NA	NA	NA	.3.34	3.34°
Corbicula	NA	IND	***			
m Wadialos	0.351	0.304 - 0.398	NA	NA	NA	NA
Hg: Modiolus	0.331	0.055 - 0.180	NA	NA	NA	NA
Cerithidea		0.055 - 0.100 NA	NA	NA	0.469	0.469
Corbicula	NA	W	•*••			
Butyltins						
retrabutyltin					***	NA
Modiolus	<4.45 ^{\$}	<3.9 - <5.0	NA	NA	NA	
Cerithidea	<1.00°	<0.6 - <1.4	NA	NA	NA	NA
	NA	NA	NA	NA	14.6	14.6 °
Corbicula	NA	'nv	•			
Tributyltin						173
Modiolus	36.6	34.9 - 38.3	NA	NA	NA	NA
Modiolus Cerithidea	2.2	1.4 - 3.5	NA	NA	NA	NA 10
	Z.Z NA	NA	NA	NA	40.7	40.70
Corbicula	AM	2723				

^{-:} Dry-weight basis for metals; wet-weight for butyltins.

[:] Dry-weight basis for metals, wet-weight for satyleths.

c : Every variable in this set was this same value.

s : All values were less than detection limits.

NA : Not applicable/Not available. No animals of this species at this site.

Note : There were no animals analyzed from the estuarine sites.

Table II-9 Continued. Summary of Concentrations of Contaminants in Animals Under Field Conditions (Concentrations in ug/kg, wet-weight)

	Marine		narine		shwater s: 11 - 13
•	Sites: 1 -	5 Sites: 5), 10, and 14	Sites	5: 11 - 13
	<u>Mean</u> Rang	<u>e</u> <u>Mean</u>	Range	<u>Mean</u>	Range
utyltins					
ibutyltin					
Modiolus	7.15" <5.0 -		NA	NA	NA
Cerithidea	2.55 0.9 -		NA	NA	NA
Corbicula	NA NA	. NA	NA	30.1	30.1 °
onobutyltin					
Modiolus	6.2* <4.6 -		NA	NA	NA
Cerithidea	1.65 1.6 -		NA	NA	NA
Corbicula	NA NA	NA	NA	11.8	11.8
PCBs					
roclor 1016					
Modiolus	<100° <100°	NA	NA	NA	NA
Cerithidea	<100 ^{\$} <100 [®]	NA	NA	NA	NA
Corbicula	NA NA	NA	NА	<100 ^s	<100°
coclor 1221					
Modiolus	<100° <100°	' NA	NA	NA	NA
Cerithidea	<100° <100°	NA	NA	NA	NA
Corbicula	NA NA	NA	NА	<100 ^{\$}	<1000
oclor 1232					
Modiolus	<100° <100°	NA	NA	NA	NA _.
Cerithidea	<100° <100°	NA	NA	NA	NA
Corbicula	NA NA	NA	NA	<100 ^s	<1000
oclor 1242					
Modiolus	<100° <100°	NA	NA	NA	NA
Cerithidea	<100° <100°	NA	NA	NA	NA
Corbicula	NA NA	NA	AN	<100 ^{\$}	<100 ©
oclor 1248	.a.at				
Modiolus	<100° <100°	NA	NA	NA	NA
Cerithidea	<100° <100°	NA	NA	NA	NA
Corbicula	NA NA	NA	AK	<100 ^{\$}	<100°
oclor 1254					
Modiolus	<100 ^s <100 ^o	NA	NA	NA	NA
Cerithidea	<100° <100°	NA	NA	NA	NA
Corbicula	NA NA	NA	NA	<100 ^s	<100°
oclor 1260	.a.ata.a				
Modiolus	<100° <100°	NA	NA	NA	NA
Cerithidea	<100° <100°	NA	NA	NA	NA_
Corbicula	NA NA	NA	NA	<100 ^{\$}	<100°

Note - there were no animals analyzed from the estuarine sites.

[:] This mean contains at least one less than value.

Every variable in this set was this same value.

S : All values were less than detection limits.

NA : Not applicable/Not available. No animals of this species at this site.

Table II-9 Continued. Summary of Concentrations of Contaminants in Animals Under Field Conditions (Concentrations in ug/kg, wet-weight)

	Mas	rine	Esti	arine	Fres	hwater
		s: 1 - 8	Sites: 9	, 10, and 14	Sites	: 11 - 13
	STLE	s. 1 - V			Moan	Range
	Mean	Range	Mean	Range	Mean	Mango
PAHS						
Acenaphthene		6	27.2	NA	NA	NA
Modiolus	<10 ^s	<100	NA	NA	NA	NA
Cerithidea	<10 ^s	<10°	NA	NA NA	<10\$	<100
Corbicula	NA	NA	NA	NA	120	
Acenaphthylene		_		373	NA	NA
Modiolus	<10 ^s	<10 [®]	NA	NA	NA	NA
Cerithidea	<10 ^s	<10°	NA	NA	<10 ^{\$}	<100
Corbicula	NA	NA	NA	NA	~10	~20
Anthracene				373	NA	NA
Modiolus	<10 ^{\$}	<10 [®]	NA	NA	NA	NA
Cerithidea	<10 ^s	<10 [©]	NA	NA	<10 ^{\$}	<10°
Corbicula	NA	NA	NA	NA	<10	~10
Benzo [a]			•			
Anthracene		_		37%	NA	NA
Modiolus	<10 ^{\$}	<100	NA	AN	NA	NA
Cerithidea	<10 ^s	<10 [©]	NA	NA	<10 ^s	<100
Corbicula	NA	NA	NA	NA	~10	720
Benzo [b]						
Fluoranthene	€ .		373	NA	NA	NA
Modiolus	<10 ^{\$}	<10 [®]	NA	NA NA	NA	NA
Cerithidea	<10 ^{\$}	<10°	NA		<10 ^s	<100
Corbicula	NA	NA	NA	NA	~10	-20
Benzo [k]						
Fluoranthen	B	<10°	NA	NA	NA	NA
Modiolus	<10 ^s	<10°	NA NA	NA	NA	NA_
Cerithidea	<10\$		NA NA	NA	<10 ^s	<10°
Corbicula	NA	NA	WA	***		
Benzo [a]						
Pyrene	20.05	<10 [©]	NA	NA	NA	NA
Modiolus	<10 ^s		NA.	NA	NA	NA
Cerithidea	<10 ^s	<10 °	NA NA	NA	<10 ^{\$}	<100
Corbicula	NA	AN	MA	619*		
Benzo [g,h,i]						
Perylene	<10\$	<10 [®]	NA	NA	NA	NA
Modiolus		<10	NA	NA	NA	NA
Cerithidea	<105	NA	NA	NA	<10 ^{\$}	<10 °
Corbicula	NA	MM				

[:] Note; there were no animals analyzed from the estuarine sites.

[:] This mean contains at least one less than value.

Every variable in this set was this same value.

1 : Every variable in this set was this same value.

2 : All values were less than detection limits.

NA : Not applicable/Not available. No animals of this species at this site.

Table II-9 Continued. Summary of Concentrations of Contaminants in Animals Under Field Conditions (Concentrations in ug/kg, wet-weight)

		rine	Estua	rine		water 11 - 13
	Site	s: 1 - 8	Sites: 9,	10, and 14	Sites	11 - 13
PAHs	Mean	Range	Mean	Range	<u>Mean</u>	Range
Chrysene					***	373
Modiolus	<10 ^{\$}	<10 [©]	NA	NA	NA	NA
Cerithidea	10.5	<10 - 11	NA	NA	NA	NA
Corbicula	NA	NA	NA	NA	<10 ^{\$}	<100
Dibenzo [a,h]						
Anthracene			***	373	NA	NA
<u> Modiolus</u>	<10 ^{\$}	<100	NA	NA	NA NA	NA
Cerithidea	<10 ^s	<10 [©]	NA	NA	<10 ^{\$}	<100
Corbicula	NA	AN	NA	NA	<10,	\10 *
Fluoranthene			***	NA	NA	NA
M odiolus	<10 ⁵	<100	NA		NA	NA
Cerithidea	<10 ^{\$}	<10 [©]	NA	NA	<10 ^s	<100
Corbicula	NA	NA	NA	NA	<10°	~10
Fluorene	_		***	N7.7	NA	NA
Modiolus	<10 ^s	<100	NA	NA	NA NA	NA NA
Cerithidea	<10 ^s	<10@	NA	NA	NA <10 ⁵	<10 [®]
Corbicula	NA	NA	NA	AN	<10.	∠1 0-
Indeno-1,2,3-						
pyrene	05	<100	NA	NA	NA	NA
Modiolus	<10 ^s		NA NA	NA	NA	NA
Cerithidea	<10 ^{\$}	<10@	NA NA	NA	<10 ^{\$}	<100
Corbicula	NA	NA	NA	NA	110	
2-Methyl-			•			
Naphthalene	37.5	<30 - 45	NA	NA	NA	NA
Modiolus		<30°	NA	NA	NA	NA
Cerithidea	<30 ^s		NA	NA	NA	NA
Corbicula	NA	NA	MA	អគ	****	
Naphthalene Modiolus	90.5*	61 - 120	NA	NA	NA	NA
	<60 ^{\$}	<60°	NA	NA	NA	NA
Cerithidea Corbicula	NA	NA	NA	NA	<10 ^s	<10 °
Phenanthrene						
Modiolus	25.5	14 - 37	NA	NA	NA	NA
Cerithidea	<10 ^{\$}	<10	NA	NA	NA	NA
Corbicula	NA	NA	NA	NA	<10 ^{\$}	<100
Pyrene					***	37.8
Modiolus	18"	<10 - 26	NA	NA	NA	NA NA
Cerithidea	<10 ^s	<10°	NA	NA	NA	NA
Corbicula	NA	NA	NA	NA	<10 ⁸	<10
Corbigula	NA	NA	NA	NA m the estuarin	<10 ^{\$}	<10°

[:] Note; there were no animals analyzed from the estuarine sites.
: This mean contains at least one less than value.
: Every variable in this set was this same value.

[:] Every variable in this and detection limits.

NA: Not applicable/Not available. No animals of this species at this site.

Table II-9 Continued. Summary of Concentrations of Contaminants in Animals Under Field Conditions (Concentrations in ug/kg, wet-weight)

	Mai	rine	Esti	arine	Fres	hwater
	Ma. Site:	s: 1 - 8	Sites: S), 10, and 14	Sites	: 11 - 13
				Range	Mean	Range
Pesticides	<u>Mean</u>	Range	<u>Mean</u>	Kange		
Aldrin	5	-3.00	NA	NA	NA	NA
Modiolus	<10 ^s	<100	NA	NA	NA	NA
Cerithidea	<10 ^s	<100		NA	<10 ^{\$}	<100
Corbicula	NA	NA	NA	NA		
-BHC	- •		NA	NA	NA	NA
Modiolus	<10 ^s	<100		NA	NA	NA
Cerithidea	<10 ^s	<100	NA		<10 ^s	<10°
Corbicula	NA	NA	NA	NA	120	
-BHC	_		272	NA	NA	NA
Modiolus	<10 ^s	<10 [®]	NA	NA NA	NA	NA
Cerithidea	<10 ^{\$}	<100	NA		<12 ^s	<120
Corbicula	NA	NA	AA	NA	746	
i-BHC			173	NA	NA	NA
Modiolus	<10 ^s	<100	NA		NA	NA
Cerithidea	<10 ^{\$}	<100	, NA	NA	<24 ^s	<24 [®]
Corbicula	NA	NA	NA	NA	724	
g-BHC		2	272	NA	NA	NA
Modiolus	<10 ^s	<100	NA		NA	NA
Cerithidea	<10 ^{\$}	<10 [®]	NA	NA	<10 ^s	<100
Corbicula	NA	NA	NA	NA	710	•••
Chlordane	_		272	NA	NA	NA
Modiolus	<10 ^s	<100	NA	NA NA	NA	NA
Cerithidea	<10 ^s	<10 [©]	NA		<10 ^s	<100
Corbicula	NA	NA	NA	AM	720	
4,4-DDD			NA	NA	NA	NA
Modiolus	<10 ^s	<100		NA NA	NA	NA
Cerithidea	<10 ^s	<100	NA	NA NA	<10 ^s	<10°
Corbicula	NA	NA	NA	INW.	~~*	
4,4-DDE	.c.at	-1.00	NA	NA	NA	NA
Modiolus	<10 ^s	<100	NA NA	NA	NA	NA
Cerithidea	<10 ^s	<100		NA	<115 ^s	<115 °
Corbicula	NA	NA	NA	N.F.	· 	
4,4-DDT		<10°	NA	NA	NA	NA
Modiolus	<10 ^s		. NA	NA	NA	NA
Cerithidea	<10 ^{\$}	<100		NA NA	<30 ^{\$}	<30 °
Corbicula	NA	NA	NA	IM		
Dieldrin	aa at	<10 [©]	NA	NA	NA	NA
Modiolus	<10 ^s		NA NA	NA	NA	NA_
Cerithidea	<10 ^{\$}	<100	377	NA	<16 ^{\$}	<16 °
<u>Corbicula</u>	NA	NA	NA.	om the estuarin	e sites	

[:] Note; there were no animals analyzed from the estuarine sites.

e: Every variable in this set was this same value.

1. All values were less than detection limits.

NA: Not applicable/Not available. No animals of this species at this site.

Table II-9 Concluded. Summary of Concentrations of Contaminants in Animals Under Field Conditions (Concentrations in ug/kg wet-weight)

	Max	ine		arine		hwater
	Sites	s: 1 - 8	Sites: 9	, 10, and 14	Sites	: 11 - 13
<u> </u>	Mean	Range	Mean	Range	Mean	Range
Pesticides						
Endosulfan I					•••	***
Modiolus	<10 ^s	<100	NA	NA	NA	NA
Cerithidea	<10 ^s	<100	NA	NA	NA	NA
Corbicula	NA	NA	NA	NA	<10 ^{\$}	<100
ndosulfan I						
Modiolus	<10 ^{\$}	<100	NA	NA	NA	NA
Cerithidea	<10 ^{\$}	<100	NA	NA	NA	NA
Corbicula	NA	NA	NA	NA	<10 ^{\$}	<100
Endosulfan						
Sulfate	-					
Modiolus	<10 ^s	<100	NA	NA	NA	NA
Cerithidea	<10 ^{\$}	<10 [®]	NA	NA	NA	NA
Corbicula	NA	AA	NA	NA	<10 ^s	<100
Endrin	_		•			
Modiolus	<10 ^s	<100	NA	NA	NA	NA
Cerithidea	<10 ^s	<100	NA	NA	NA	NA
Corbicula	NA	AN	NA	NA	18 ^{\$}	184
Endrin Aldeh		_				
Modiolus	<10 ^s	<100	NA	NA	NA	NA
Cerithidea	<10 ^s	<100	NA	NA	NA .	NA
Corbicula	NA	NA	NA	NA	<10 ^{\$}	<100
Reptachlor	<u> </u>	_				
Modiolus	<10 ^s	<100	NA	NA	NA	NA
Cerithidea	<10 ^{\$}	<10 [©]	NA	NA	NA	NA
Corbicula	NA	NA	NA	NA	42 ^s	42 °
Reptachlor						
Epoxide	•				•••	
Modiolus	<10 ^s	<10	NA	NA	NA	NA
Cerithidea	<10 ^s	<100	NA	NA	NA	NA
Corbicula	NA	NA	NA	NA	<10 ⁵	<100
ethoxychlor	, .					•••
Modiolus	<10 ^s	<10	NA	NA	AN	NA
Cerithidea	<10 ^s	<10	NA	NA	NA	NA
Corbicula	NA	NA	NA	NA	<10 ^{\$}	<10 ©
Coxaphene					•	
Modiolus	<500 ^{\$}	<500°	NA	NA	NA	NA
Cerithidea	<10 ^{\$}	<100	NA	NA	NA	NA
Corbicula	NA	NA	NA	NA	NA	NA

[:] Note; there were no animals analyzed from the estuarine sites.

Every variable in this set was this same value.

1 : All values were less than detection limits.

NA : Not applicable/Not available. No animals of this species at this site.

III. CONCLUSIONS AND RECOMMENDATIONS

The naturally-occurring wetlands in the San Francisco Bay area and the adjacent estuarine and fresh water areas appear to contain relatively low levels of most metal, PCB, PAH, butyltin, and pesticide contaminants in soil/sediment, plants, and animals. Metals such as lead, chromium and arsenic appeared to have elevated concentrations in some plants and animals. There is, however, a very depauperate faunal component in all the naturally occurring wetlands surveyed, that may be the result of a more subtle impact. The introduction and proliferation of a tiny exotic clam from Asia, Potamocorbula amurensis may be a contributing factor. This species out-competes and is a more efficient feeder than existing species. In the brackish and freshwater sites, the clam Corbicula was represented also by many shells and only a few live animals. The invasion of Potamocorbula amurensis also includes brackish waters such as in Suisun Bay. Snails were equally scarce on all sites but Site 8. This lack of animals is quite peculiar since the snails, and mussels are invasive species from the U. S. East Coast, and the clams are an equally opportunistic species from Asia. While it is likely that the introduction of the exotic species (Nassarius, Modiolus, and Corbicula) accompanied some disturbance of the California wetlands, these are very hardy species and would have been expected to survive subsequent disturbances. However, Potamocorbula amurensis could even be out-competing these species. This survey was conducted toward the end of a five year drought experienced in the region. This climatic condition no doubt influenced the existing fauna available for sampling. Further documentation of the fauna of the San Francisco Bay area wetlands appears to be warranted. In addition, further evaluation of the status of arsenic, lead and chromium in wetland foodwebs in the San Francisco Bay area.

The data presented in this report establishes an initial baseline for wetlands in the San Francisco Bay Area and can be used to interpret wetland test results for wetland creation or restoration projects. As more information becomes available, this baseline should be updated to include all ongoing and future data collection activities.

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APPENDIX A

Field Survey

Plant and Animal Tissue Concentrations

a. Plant Codes

SPA <u>Spartina</u> <u>Foliosa</u>
SCI <u>Scirpus olynei</u>
SAL <u>Salicornia subterminalis</u>
TYP <u>Typha latifolia</u>

b. Animal Codes

SN <u>Cerithidea</u> ?
CB <u>Corbicula fluminea</u>
MO <u>Modiolus demissus</u>

PLANT METAL RESULTS

(Concentrations in mg/kg Dry Weight, ppm)

Battelle	Sponsor			,	:	i	ć	ė	- 4	5	3
Code	Code	Υs	Ö	3	Z	2	8	5	50	3	7
* 376	40 C	1111	5.4	8.86	3.29	2.7 U	0.81 U	44.9	0.2	0.22	0.008
245.0	X 10 10 10 10 10 10 10 10 10 10 10 10 10	121	D 6.9	6.43	3.24	4.9	0.85 U	25.9	0.13	0.043	0.012
245.2	B7A.SPA	110) 9	4.64	4.29	3.6	0.79 U	28.5	0.07	0.043	600.0
,	D2A.CD4.12.1	101	6.	6.44	4.61	3.0	0.85 U	30.5	0.14	0.063	0.05
243-4,3,0,		1 96 0	4.7 U	4.63	1.96	4.0	0.74 U	27.6	0.11	0.055	900.0
243-7	D2D.CDA.1 2	- 1	1 6.3	7.2	4.11	4.7	0.76 U	34.8	0.23	990'0	0.02
245.40		76:0	3.7 U	10.45	2.71	2.4 U	0.70 U	16.6	0.01	690.0	0.012
245-10	BID-SAL 2	0.96 U	3.7 U	11.46	2.68	2.5 U	0.72 U	20.0	0.02	0.093	0.016
243-11	DIC. 541.13	101	4.2	7.92	3.07	4.1	0.77 U	18.0	0.01	0.051	0.01
245-12,14	RIC:SAL-2.4	1.2 U	4.8 U	8.93	2.47	2.9 U	0.87 U	18.5	0.02	0.082	0.017
245.13,13	R20.5AI-13	0 1.1	10.6	13.9	6.07	3.9	0.78 U	31.5	0.03	0.089	0.022
243:10,10	820.SAL-24	0.96 U	5.2 U	11.7	3.03	4.6	0.74 U	23.2	0.01 U	0.1	0.014
243-17-13	R13C.TYP.1 2	0.87 U	4.2 U	5.12	4.27	2.8	0.62 U	34.3	0.01 U	0.07	0.016
17.07.50,	R138.TYP.1 2	U 6.0	60	7.59	9.40	2.3	0.63 U	93.6	0.01 U	0.14	0.015
243.22,23	R130.TVP.1 2	0.83 U	7	4	8.31	2.1 U	0.62 U	98.8	0.01 U	60.0	0.01
240.64,C3	R134.TYP	0.91 U	7.1 U	9.41	7.40	0.4	0.66 U	61.0	0.01 U	0.13	0.014
245.20	R100.TVP	0.87 U	7.1 ℃	10.18	2.54	2.1 U	0.69 U	21.3	0.03	0.1	0.012
245.28	B10A.TYP	0.79 U	3.4 U	4.06	2.28	2.0 U	0.63 U	19.0	0.01 U	0.035	0.016
04.070	B10C-TVP	U 62.0	3.5 U	5.36	2.64	2.19	0.63 U	18.6	0.02	0.055	0.022
245.20	B108.TYP.1.2	0.77 U	3.6 U	4.95	2.16	1.9 U	0.63 U	17.8	0.02	0.067	0.026
10,00,000	878.SPA	U 66.0	6.8	6.1	7.40	2.7	0.72 U	25.5	90.0	0.064	0.017
20.042	818.SPA	0.86 U	7.1	4.35	4.34	2.2	0.64 U	21.2	0.12	0.032	0.015
243-33 346 34 36 36 BED 4	R98.SCL123 REP 1	0.82 U	9.0	6.64	7.92	2.50	0.62 U	43.5	90.0	0.37	0.026
	B98.SCL1 2.3 BFP 2	0.82 U	3.6 U	7.72	9.95	2.1 U	0.63 U	49.2	0.05	0.38	0.024
ב ב	į	0.03 U	4.2 U	10.13	2.03	2.50	0.65 U	39.7	60.0	0.35	0.012
245.38.30	B90.SCI-1.2	0.79 U	3.9	5.52	1.97	2.00 U	0.58 U	27.2	0.04	0.19	0.024
245.40 41 42 REP 1	R9A-SCI-1.2.3 REP 1	0.71 U	6.4	6.83	4.26	2.00 U	0.60 U	41.7	0.05	0.2	0.02
	R9A-SCI-1.2.3 REP 2	0.75 U	4.4	8.4	5.65	2.0 U	0.60 U	41.3	0.05	0.19	0.021
į	B7C-SAL-1	1.14	9.9	8.79	5.37	2.30 U	O.69.0	19.5	0.02	0.067	0.011
245.44	R7.SAL-2	0.93 U	5.7 U	8.88	4.04	2.40 U	0.79 U	22.4	0.02	0.14	0.017
24 5-14 24 5-45	B5C-SAL-1	0.62 U	6.8	89.68	5.66	2.80	0.65 U	15.7	0.02	0.039	0.012
245.46	B5C-SAL-2	1.18	7.9 U	10.5	5.40	2.60 U	0.90 U	45.2	0.01 U	0.083	0.013
245.47	B4D-SAL-1	0.76 U	4.6	6.52	1.66	2.10 U	0.63 U	12.04	0.01	0.094	0.014
245.40	B40.SAL.2	0.91 U	∞	11.09	2.14	2.40 U	0.79 U	30.7	0.02	0.16	0.019
245.40	B70.SAI-1	2.20	25.4	17.7	19.20	5.40	0.73 U	37.5	0.05	1.0	0.059
64.642	B70.5A1.2	1.00 U	7.7	8.94	2.96	2.60 U	0.86 U	22.6	0.01 U	0.1	0.016
243-50 Procedural Blank	_	\ \ \ \ \ \	4 /2	Y/X	∀ /Z	N/A	Y/Z	N/A	0.01	0.01 U	0.004
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U indicates analyte not detected at detection limit shown NA indicates not appropriate for XRF analysos.

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STANDARD REFERENCE MATERIAL

(Concentrations in mg/kg Dry Weight, ppm)

Battelle Sponsor Code Code	As	Ö	õ	Z	æ	ď	5	A	3	4
SRM 1571 ORCHARD LEAVES, REP 1 SRM 1571 ORCHARD LEAVES, REP 1A SRM 1571 ORCHARD LEAVES, REP 2	11.2 8.72 10.54	2.4 1.4 1.6 1.0	12.7 12.4	1.07	45.7 48.5	0.77 U 0.70 U	27.8	0.01 U 0.01 U	00	0.1
SRM 1571 ORCHARD LEAVES, REP 2A SRM 1571 ORCHARD LEAVES, REP 3	10.1	3.5 U	11.23	1.20	43.3	0.60 U 0.59 U	23.9 23.9 25.8			
Certified Value:	14 ±2	2	12 ± 1	1.3 ±0.2	45 ±3	0.08 ±0.01	25 ±3	2	0.11 ±0.02	0.11 ±0.02 0.155 ±0.015
SRM 1566A OYSTER TISSUE (RICHLAND), REP 1 SRM 1566A OYSTER TISSUE (MSL), REP 1 SRM 1566A OYSTER TISSUE (RICKLAND), REP 2 SRM 1566A OYSTER TISSUE (MSL), REP 2 SRM 1566A OYSTER TISSUE (RICHLAND), REP 3 SRM 1566A OYSTER TISSUE (MSL), REP 3	64.41 66.41 69.41 69.41 69.41 66.61	8 8 4 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	65.7 68.4 64.7 62.7 62.7	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	2 2 2 3 6 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	872.0 892.0 817.0 837.0 845.0	1.28	4.09	0.059
Certified Value:	14 ±1.2	1.43 ±0.46	66.6 ± 4.3 2	2.25 ±0.44;71 ±0.014*	±0.014	2.21 ±0.24	830 ±57	1.68 ±0.15	4.15 ±0.38	0.0642 ±.0067

• Lead determined by ICP-MS, not XRF.

PAH RESULTS FOR WES PLANT SAMPLES (Concentrations in ug/Kg Dry Weight, ppb)

cf# 245

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	Date Date Acenaph-	Ext'd Anal'd % Moist. thene	4/11/91 NA 1	4/11/91	*	3/18/91 4	1,2,3 3/18/91 4/1	3/18/91 4/1	и	3/18/91 4		_	*	6	4 3/18/91 4/11/91	11/29/90 12/12/90	1,2 11/29/90 12/12/90	11/29/90 1	1,2 11/29/90 1	•		_	1,2 11/29/90	•	12/13/90 12/14/90	12/13/90 12/14/90 NA 1	11/29/90 12/12/90 77 1	12/13/90 80 1	11/30/90 12/13/90 NA 1	11/30/90 12/13/90 82	11/30/90 12/13/90 NA	,2,3 11/30/90 12/13/90 75	11/30/90 12/13/90 78 1	12/13/90 93 1	11/30/90 12/13/90 74 1	11/30/90 12/13/90 89 1	11/30/90 12/13/90 76 1	11/30/90 12/13/90 88 1	-	_
	Date Date Acenaph-	Anal'd % Moist. thene	3/18/91 4/11/91 NA	3/18/91 4/11/91	3/18/91	3/18/91 4	-1,2,3 3/18/91 4/1	3/18/91 4/1	и	3/18/91 4		.3 3/18/91 4	*	6	4 3/18/91 4/11/91	11/29/90 12/12/90	1,2 11/29/90 12/12/90	11/29/90 1	1,2 11/29/90 1	12/13/90	11/29/90 1	11/29/90 1	1,2 11/29/90	11/29/90	12/13/90 12/14/90	12/13/90 12/14/90 NA 1	11/29/90 12/12/90 77 1	11/29/90 12/13/90 80 1	11/30/90 12/13/90 NA 1	11/30/90 12/13/90 82	11/30/90 12/13/90 NA	,2,3 11/30/90 12/13/90 75	11/30/90 12/13/90 78 1	11/30/90 12/13/90 93	11/30/90 12/13/90 74 1	11/30/90 12/13/90 89 1	11/30/90 12/13/90 76 1	11/30/90 12/13/90 88 1	-	_
-	r Date Date Acenaph-	Ext'd Anal'd % Moist. thene	3/18/91 4/11/91 NA	3/18/91 4/11/91	3/18/91	3/18/91 4	-1,2,3 3/18/91 4/1	3/18/91 4/1	и	3/18/91 4		.3 3/18/91 4	*	6	4 3/18/91 4/11/91	11/29/90 12/12/90	1,2 11/29/90 12/12/90	11/29/90 1	1,2 11/29/90 1	12/13/90	11/29/90 1	11/29/90 1	1,2 11/29/90	11/29/90	12/13/90 12/14/90	12/13/90 12/14/90 NA 1	11/29/90 12/12/90 77 1	11/29/90 12/13/90 80 1	11/30/90 12/13/90 NA 1	11/30/90 12/13/90 82	11/30/90 12/13/90 NA	,2,3 11/30/90 12/13/90 75	11/30/90 12/13/90 78 1	11/30/90 12/13/90 93	11/30/90 12/13/90 74 1	11/30/90 12/13/90 89 1	11/30/90 12/13/90 76 1	11/30/90 12/13/90 88 1	-	_
	Date Date Acenaph-	Ext'd Anal'd % Moist. thene	3/18/91 4/11/91 NA	3/18/91 4/11/91	*	3/18/91 4	-1,2,3 3/18/91 4/1	3/18/91 4/1	R28-SPA-1,2 3/18/91 4/11/91 85 10 U	3/18/91 4		_	RIC-SAL-2,4 3/18/91 4/11/91 89 10 U	R2D-SAL-1,3 3/18/91 4/11/91 73 10 U	4/11/91	11/29/90 12/12/90	1,2 11/29/90 12/12/90	1,2 11/29/90 1	-1,2 11/29/90 1	12/13/90		11/29/90 1	1,2 11/29/90	11/29/90	12/13/90 12/14/90	12/13/90 12/14/90 NA 1	1,2,3 11/29/90 12/12/90 77 1	11/29/90 12/13/90 80 1	11/30/90 12/13/90 NA 1	11/30/90 12/13/90 82	11/30/90 12/13/90 NA	,2,3 11/30/90 12/13/90 75	1 11/30/90 12/13/90 78 1	12/13/90 93 1	12/13/90 74 1	0 89 1	11/30/90 12/13/90 76 1	11/30/90 12/13/90 88 1	R7D-SAL-1 11/30/90 12/13/90 80 10 U	R7D-SAL-2 11/30/90 12/13/90 89 10 U
	Date Date Acenaph-	Ext'd Anal'd % Moist. thene	3/18/91 4/11/91 NA	3/18/91 4/11/91	3/18/91	3/18/91 4	-1,2,3 3/18/91 4/1	3/18/91 4/1	и	3/18/91 4		.3 3/18/91 4	*	6	4 3/18/91 4/11/91	11/29/90 12/12/90	1,2 11/29/90 12/12/90	11/29/90 1	1,2 11/29/90 1	12/13/90	11/29/90 1	11/29/90 1	1,2 11/29/90	11/29/90	12/13/90 12/14/90	RIB-SPA, DUP 12/13/90 12/14/90 NA 1	R9B-SCI-1,2,3 11/29/90 12/12/90 77 1	11/29/90 12/13/90 80 1	11/30/90 12/13/90 NA 1	R9D-SCI-1,2 11/30/90 12/13/90 82 1	P R9D-SCI-1,2 11/30/90 12/13/90 NA 1	R9A-SCI-1,2,3 11/30/90 12/13/90 75	11/30/90 12/13/90 78 1	11/30/90 12/13/90 93	11/30/90 12/13/90 74 1	11/30/90 12/13/90 89 1	11/30/90 12/13/90 76 1	11/30/90 12/13/90 88 1	-	_
	Sponsor Date Date Acenaph-	Code Ext'd Anal'd % Moist. thene	3/18/91 4/11/91 NA	3/18/91 4/11/91	3/18/91	3/18/91 4	R2A-SPA-1,2,3 3/18/91 4/1	3/18/91 4/1	и	3/18/91 4		.3 3/18/91 4	RIC-SAL-2,4	R2D-SAL-1,3	R2D-SAL-2,4 3/18/91 4/11/91	11/29/90 12/12/90	R13C-TYP-1,2 11/29/90 12/12/90	R13B-TYP-1,2 11/29/90 1	R13D-TYP-1,2 11/29/90 1	12/13/90	11/29/90 1	11/29/90 1	R108-TYP-1,2 11/29/90	R7B.SPA 11/29/90	12/13/90 12/14/90	RIB-SPA, DUP 12/13/90 12/14/90 NA 1	R9B-SCI-1,2,3 11/29/90 12/12/90 77 1	11/29/90 12/13/90 80 1	11/30/90 12/13/90 NA 1	R9D-SCI-1,2 11/30/90 12/13/90 82 1	P R9D-SCI-1,2 11/30/90 12/13/90 NA 1	R9A-SCI-1,2,3 11/30/90 12/13/90 75	11/30/90 12/13/90 78 1	11/30/90 12/13/90 93	11/30/90 12/13/90 74 1	11/30/90 12/13/90 89 1	11/30/90 12/13/90 76 1	11/30/90 12/13/90 88 1	-	_
	Sponsor Date Date Acenaph-	Code Ext'd Anal'd % Moist. thene	1 BLANK 1 3/18/91 4/11/91 NA 1	R58-SPA 3/18/91 4/11/91	R48.SPA 3/18/91 4	R7A-SPA 3/18/91 4	,6, R2A-SPA-1,2,3 3/18/91 4/1	R1A-SPA 3/18/91 4/1	R28-SPA-1,2	RID-SAL-1 3/18/91 4	RID-SAL-2	14 RIC-SAL-1,3 3/18/91 4	RIC-SAL-2,4	R2D-SAL-1,3	R2D-SAL-2,4 3/18/91 4/11/91	BLANK 2 11/29/90 12/12/90	R13C-TYP-1,2 11/29/90 12/12/90	R13B-TYP-1,2 11/29/90 1	R13D-TYP-1,2 11/29/90 1	R13A-TYP 12/13/90 1	A10D-IYP 11/29/90 1 A10A.TYP 11/29/90 1	R10C-TYP 11/29/90 1	R108-TYP-1,2 11/29/90	R7B.SPA 11/29/90	R1B-SPA 12/13/90 12/14/90	RIB-SPA, DUP 12/13/90 12/14/90 NA 1	5,36 R9B-SCI-1,2,3 11/29/90 12/12/90 77 1	R9C-SCI 11/29/90 12/13/90 80 1	BLANK 3 11/30/90 12/13/90 NA 1	R9D-SCI-1,2 11/30/90 12/13/90 82 1	P R9D-SCI-1,2 11/30/90 12/13/90 NA 1	R9A-SCI-1,2,3 11/30/90 12/13/90 75	R7C-SAL-1 11/30/90 12/13/90 78 1	11/30/90 12/13/90 93	11/30/90 12/13/90 74 1	11/30/90 12/13/90 89 1	7 R4D.SAL-1 11/30/90 12/13/90 76 1	1 R4D-SAL-2 11/30/90 12/13/90 88 1	-	R7D-SAL-2
	e Sponsor Date Date Acenaph-	Ext'd Anal'd % Moist. thene	3/18/91 4/11/91 NA	R58-SPA 3/18/91 4/11/91	3/18/91	3/18/91 4	R2A-SPA-1,2,3 3/18/91 4/1	3/18/91 4/1	и	RID-SAL-1 3/18/91 4		.3 3/18/91 4	*	6	R2D-SAL-2,4 3/18/91 4/11/91	11/29/90 12/12/90	1,2 11/29/90 12/12/90	11/29/90 1	,25 R13D-TYP-1,2 11/29/90 1	R13A-TYP 12/13/90 1	11/29/90 1	R10C-TYP 11/29/90 1	.31 R108-TYP-1,2 11/29/90	R7B.SPA 11/29/90	R1B-SPA 12/13/90 12/14/90	RIB-SPA, DUP 12/13/90 12/14/90 NA 1	5,36 R9B-SCI-1,2,3 11/29/90 12/12/90 77 1	R9C-SCI 11/29/90 12/13/90 80 1	11/30/90 12/13/90 NA 1	R9D-SCI-1,2 11/30/90 12/13/90 82 1	P R9D-SCI-1,2 11/30/90 12/13/90 NA 1	41,42 R9A-SCI-1,2,3 11/30/90 12/13/90 75	11/30/90 12/13/90 78 1	11/30/90 12/13/90 93	11/30/90 12/13/90 74 1	t6 R5C-SAL-2 11/30/90 12/13/90 89 1	7 R4D-SAL-1 11/30/90 12/13/90 76 1	1 R4D-SAL-2 11/30/90 12/13/90 88 1	-	_

U indicates analyte not detected at detection limit shown B indicates analyte presont in blank associated with that sample (one method blank was run on each date) NA indicates not applicable

PAH RESULTS FOR WES PLANT SAMPLES (Concentrations in ug/Kg Dry Weight, ppb)

-	•				Dibenzo-			Indone				
Daileile	Sponsor	Date	Date		(a,h)-	Fluor-		103	S. Mathul.	41.4	i	
	880	Ext'd	Anal'd	Chrysene	anthracene	anthene	Fliorene	Diviona	Alcohiltor	- udbu	Phenan-	
BLANK 1	BLANK 1	3/18/91	4/11/91	10	101	5	11 04 11	- 1	•	•∣•	- 1	Pyrene
245-1	R5B·SPA	3/18/91	4/11/91	9		-			20 0		10 10	
245.2	R4B-SPA	3/18/91	4/11/91	0		\$	2 5		,		0	
245.3	R7A.SPA	3/18/91	4/11/91	0	101	5						
245-4,5,6,	R2A.SPA-1,2,3	3/18/91	4/11/91		-	2 5				₹ (37	10 C
245-7	R1A-SPA	3/18/91	4/11/91	Ξ	-		2 4				30	
245-8,9	R2B.SPA-1,2	3/18/91	4/11/91			2 5					31	
245-10		3/18/91	4/14/04		2 .	2 :	0 0 0		32	20 U	20	
245.11	RID-SAL-2	10/01/0	10/11/1	- 1		0	10 n		20 U	50 U		
245-12.14	RIC-SAL-1-3	3/18/01	10/11/1	2 5		0	n et	_	190	380	130	
245-13,15	RIC.SAL.24			2 :		10	10 C	10 U	20	20		
245-16,18	R2D.SAL 4 3		16/11/81		10	- 0	U 10 U	10 U	20 U		28	
245-17.19	820.SAL.24	# C C C C C C C C C C C C C C C C C C C	18/11/4			9	10 C	10 U	37	80	10 1	_
BLANK 2	PI ANK 2	16/01/0	19/11/4	0.		- 0	U 10 U	10 U	20 U			=======================================
245.20.21	Disc Typ 1		12/12/90	0	0		-	10 U		c	= =	
245.22.23	0130-17P-1,2	11/29/90		5	10		_		· ec	0		2 9
24.24.24.0	7,1-11-0010	06/62/11		10	100	-	U 10 U	10 U	20 11			2 :
245.64,63	R130-17P-1,2	11/29/90	12/12/90	10 L		101	U 10 U	10 1	- 00	9 0	2 5	2 :
243.50	H13A-1 YP		12/14/90	- - -	100	_				77		0 0 0
17:042	MIOU-IYP		12/12/90	10 C	100	10					7 6	2 : 2 :
245-28	H10A-TYP	11/29/90 1	12/12/90	_ 0F	100		-		9 6) 0
245.29	R10C-TYP	11/29/90 1	12/12/90	100	27		2 \$		6 6		10 C	10 U
245-30,31	R108-TYP-1,2	11/29/90 1	12/12/90	101	= -	_	2 0		22		=	10 U
245.32	R78-SPA	11/29/90 1	12/12/90	101					20 O		10 U	10 U
245.33	R1B.SPA	12/13/90 1	12/14/90			_	2 0		20 U	28	12	12
245-33, DUP	R18 SPA, DUP	12/13/90 1	2/14/90	, t) 			0	42	13	10 U
245-34,35,36	R9B-SCI-1,2,3	11/29/90 1	12/12/90			• ¢		0 0 0	20 C	4 80	18	19
245-37	R9C-SCI	11/29/90 1	2/13/90		-	2 0			0	18	6	
BLANK 3	BLANK 3	•	2/13/90	-		2 9	0 (20 U	20 U		10 U
245-38,39	R9D-SCI-1,2	_	12/13/90		- +		0 (0	0	10 U	10 C
245-38,39 DUP	R9D-SCI-1.2		2/13/90			:	0 (20 U	0	-	10 U
245-40,41,42	R9A-SCI-1,2,3	•	12/13/90		- 6		2 (20 U	30 U	0	10 U
245-43	R7C SAL-1	11/30/90 1	12/13/90	_	= -						17	19
245.44	R7-SAL-2		2/13/90	_		2 :		_ _ _		30 U	10 U	10 1
245.45	R5C.SAL.1		12/12/20	_		: :			20 U	9		
245.46	RSC.SAL.2	00/00/1	00/01/2			⊃ :	0	10 U	20 U	30 11		=
245.47	DAD CAL 4	_	08/81/21				-	10 U	20 11			
245.40	740.3AL-1	•	12/13/90	- - -	_	5 C	10 U	100	200	, c)) (
243.48	H4U-SAL-2	_	2/13/90		100	10 10	10 0				0) 0
245.49	R7D-SAL-1	•	12/13/90	10 U	100	Ξ	n 01			- (10 C
245-50	R7D-SAL-2	11/30/90 13	12/13/90	10 U	100	100	100	200	0 0	0 70) 0 1	12
		3					,) •) }	<u>-</u>	11	10 U

U indicates analyte not detected at detection limit shown. B indicates analyte present in blank associated with that sat the indicates not applicable.

PAH RESULTS FOR WES PLANT SAMPLES

(Concentrations in ug/Kg Dry Welght, ppb)

SURROGATE PERCERNT RECOVERIES

				Naph-	Acen-	Phenan-	B[a]P-	Fluorene-	Fluorene- Chrysene-
Battelle	Sponsor	Date	Date	•					
800	නී	Ext'd	Anal'd	48	d10	d1020	d12	d10	d12
JLANK 1	BLANK 1	3/18/91	4/11/91	%86	¥	¥	≨	% 99	110%
245-1	R5B-SPA	3/18/91	4/11/91	36%	ž	ž	≨	35%	37%
245-2	R4B-SPA	3/18/91	4/11/91	110%	ž	≨	≨	120%	110%
245-3	R7A-SPA	3/18/91	4/11/91	79%	≨	≨	≨	100%	85%
245-4.5.6.	R2A-SPA-1.2.3	3/18/91	4/11/91	100%	ž	¥	≨	110%	110%
245-7	R1A-SPA	3/18/91	4/11/91	120%	¥	ž	₹	130%	110%
245-8.9	R2B-SPA-1,2	3/18/91	4/11/91	76%	ž	ž	≨	85%	82%
245.10	RID-SAL-1	3/18/91	4/11/91	110%	ž	¥	₹	130%	130%
245-11	RID-SAL-2	3/18/91	4/11/91	110%	ž	¥	₹	120%	130%
245-12-14	RIC-SAL-1.3	3/18/91	4/11/91	36%	≨	ž	₹	35%	37%
245-13-15	RIC-SAL-2.4	3/18/91	4/11/91	% 96	ž	ž	₹	100%	91%
245.16.18	R2D-SAL-1.3	3/18/91	4/11/91	94%	ž	ž	≨	100%	100%
245.17.19	R2D.SAL-2.4	3/18/91	4/11/91	22%	≨	≨	≨	20%	23%
BI ANK 2	BLANK 2	11/29/90	12/12/90	30 %	20 %	73 %	120	*	
245.20.21	R13C-TYP-1.2	11/29/90	12/12/90	72 %	83 %	78 %	120	*	
245.22.23	R13B-TYP-1,2	11/29/90	12/12/90	73 %	85 %	80 %	120	*	
245.24.25	R130-TYP-1.2	11/29/90	12/12/90	84 %	97 %	91 %	136	. *	
245.26	R13A-TYP	12/13/90	12/14/90	52 %	63 %	62 %	91	*	
245.27	R100-TYP	11/29/90	12/12/90	78 %	% 06	81 %	130	*	
245.28	R10A-TYP	11/29/90	12/12/90	% 09	% 89	63 %	92	*	
245.29	R10C-TYP	11/29/90	12/12/90	75 %	87 %	79 %	125	*	
245.30.31	R108-TYP-1.2	11/29/90	12/12/90	% 69	83 %	77 %	120	*	
245.32	R78.SPA	11/29/90	12/12/90	35 %	65 %	72 %	110	*	
245.33	R1B.SPA	12/13/90	_	46 %	65 %	63 %	95	*	
245.33 DUP	RIB.SPA. DUP	12/13/90		76 %	87 %	78 %	120	*	
245.34.35.36	R9B-SCI-1.2.3	11/29/90	4	46 %	51 %		73	*	
245.37	R9C-SCI	11/29/90		28 %	65 %	77 %	125	*	
BLANK 3	BLANK 3	11/30/90	12/13/90	31 %	44 %		110	*	
245.38.39	R9D-SCI-1,2	11/30/90	12/13/90	% 09	79 %	75 %	120	*	
245.38.39 DUP	R9D-SCI-1,2	11/30/90	12/13/90	29 %		-	120	*	
245.40.41.42	R9A-SCI-1,2,3	11/30/90	12/13/90	45 %	% 09	59 %	87	*	
245.43	R7C-SAL-1	11/30/90	12/13/90	56 %	81 %	78 %	120	*	
245.44	R7.SAL.2	11/30/90	12/13/90	73 %	86 %	83 %	130	*	
245.45	R5C.SAL-1	11/30/90	12/13/90	% 69	85 %	82 %	120	*	
245.46	R5C-SAL-2	11/30/90	12/13/90	23 %	70 %	84 %	130	*	
245.47	R4D-SAL-1	11/30/90	12/13/90	% 99	% 08	78 %	120	*	
245.48	R40.SAL-2	11/30/90	12/13/90	67 %	85 %	81 %	120	*	
245.49	R70-SAL-1	11/30/90	12/13/90	62 %	87 %	% 98	140	*	
245-50	R7D-SAL-2	11/30/90	12/13/90	62 %	85 %	82 %	130	*	

U indicates analyte not detected at detection limit shown B indicates analyte present in blank associated with that sat NA indicates not applicable

PAH MATRIX SPIKE PERCENT RECOVERIES 61# 245

Benzo- (g,h,i)- perylene	109 % 119 %	91 88 %	410 %
Benzo[a] Dyrene	104 %	100 % 88 % %	\$ 7 C
Benzo(k) Fluor- Bei anthene p	103 %	101 % 102 %	8 % 8 %
<u> </u>	* *	* *	* *
Benzo[b] Fluor- anthene	111	107	6 6 1
Benzo(a) Anthra- cene	119 % 129 %	117 % 120 %	95 % %
Anthra- A	114 % 128 %	### ### # ##	107 %
Acenaph- /	107 % 111 %	97 %	00 00 00 0
Acenaph- A thene	105 %	106 %	96 % 10 % 1
% Moist.	3 3	£ £	
Date Anal'd	12/11/90	12/12/90	12/13/90
Date Ext'd	11/28/90 12/11/90 11/28/90 12/11/90	11/29/90 12/12/90 11/29/90 12/12/90	11/30/90 12/13/90 11/30/90 12/13/90
Sponsor	Matrix spike RSA-SPA-1,2,3 Matrix Spike DupRSA-SPA-1,2,3	Matrix Spike R9B-SCI-1,2,3 Matrix Spike Duc R9B-SCI-1,2,3	Matrix spike R9A-SCI, 1,2,3 Matrix Spike Dup R9A-SCI, 1,2,3
Battelle Code	Matrix spike Matrix Spike Dup	Matrix spike Matrix Spike Du	Matrix spike Matrix Spike Du

PAH MATRIX SPIKE PERCENT RECOVERIES

PAH MATRIX SPIKE PERCENT RECOVERIES

Battelle Code	Sponsor Code	Date Ext'd	Date Anal'd Chr	Chrysene	Dibenzo- (a,h)- anihracene	Fluor- anthene	Fluorene	Indeno- 1,2,3- Pyrene	2-Methyl- Naphthene	Naph- thalene	Phenan- threne	Pyrene
Matrix spike Matrix Spike Dup	Matrix spike RSA-SPA-1,2,3 Matrix Spike Dug RSA-SPA-1,2,3	11/28/90	11/28/90 12/11/90 11/28/90 12/11/90	99 7 80 %	105 % 129 %	113	% 111 % 134 %	110 %	N N N	29 % 411 %	128 % 144 %	109 % 124 %
Matrix spike Matrix Spike [Matrix spike R9B-SCI-1,2,3 Matrix Spike Dup R9B-SCI-1,2,3	11/29/90 11/29/90	11/29/90 12/12/90 11/29/90 12/12/90	103 %	118% 112%	143	% 128 % % 124 %	101 % 102 %	Z Z	4 የ ያ	128 % 128 %	139 %
Matrix spike Matrix Spike I	Matrix spike R9A-SCI, 1,2,3 Matrix Spike Dup R9A-SCI, 1,2,3	11/30/90 11/30/90	11/30/90 12/13/90 11/30/90 12/13/90	8 8 4 4 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	99%	104 94	% 105 % 101 %	110 %	* *	82 % % %	102 % 94 %	101 %

PAH MATRIX SPIKE PERCENT RECOVERIES

SURROGATE PERCENT RECOVERIES

				Naph-	Acen-	Phenan-	B[a]P.	_
Code	Sponsor	Cate Ext'd	Date Anal'd	88	d10	d10.00	d1020 d12	
Matríx spike	RSA-SPA-1,2,3	11/28/90	12/11/90	57 %	40	80 80 80	60	*
Matrix Spike D	Spike Dup RSA-SPA-1,2,3	11/28/90	11/28/90 12/11/90	23 %	49 %	20 %	78 %	*
Matrix spike	Mairix spike R9B-SCI-1,2,3	11/29/90	11/29/90 12/12/90	13 %	35 %	53 %	100	×
Matrix Spike [Jur R9B-SCI-1,2,3	11/29/90	11/29/90 12/12/90	36 %	63 %	73 %	110 %	*
Matrix spike	R9A-SCI, 1,2,3	11/30/90	11/30/90 12/13/90	54 %	79 %	77 %	140	×
Matrix Spike C	Matrix Spike Duc R9A-SCI, 1,2,3	11/30/90	11/30/90 12/13/90	29 %	81 %	78 %	110 %	×

PLANT BUTYLTIN RESULTS

(Concentrations in ug/kg Dry Weight, ppm)

		5,50	TETOABIITYI	TENENTY	IXTIBIO	MONORITM	SURROGATERECOVERY
Sallelle	ioellodo G		1		I NIE	N	TRIDENYI TIN
ode	Code	Extracted	2	NI.			
46.1	BSB.SPA	12/21/90	4.10	4.5 U	3.8 ∪	3.8 U	76%
45.2	RAB.SPA	12/21/90	4.2 U	4.6 U	3.9 U	3.9 U	78%
45.3	R7A-SPA	12/21/90	4.1 U	4.4 U	3.8 U	3.8 U	74%
45.4.5.6	R2A.SPA-1.2.3	12/21/90	2.3 U	2.5 U	2.2 U	2.2 N	65%
45.7		1/15/91	4.7 U	9.5	4.3 U	19.8	. %68
45.8 9	R28-SPA-1.2	12/21/90	3.1 U	3.4 U	2.9 U	2.9 U	62%
45.10	RID-SAL-1	1/15/91	3.2 U	7.4	2.9 U	21.1	89%
245.41	RID-SAL-2	12/21/90	4.1 U	4.5 U	3.9 U	3.9 U	20%
245.12.14	RIC-SAL-1.3	12/21/90	1.6 U	1.8 U	1.5 U	1.5 U	65%
245.12.15	BIC.SAL-2.4	12/21/90	4.5 U	4.9 U	4.3 U	4.2 U	%99
245.16.18	R20-SAL-1.3	1/15/91	3.2 U	7.48	2.9 U	12.5 B	%68
245.17.49	B2D.SAL-2.4	12/21/90	2.8 U	3.0 U	2.6 U	2.6 U	%92
245.20.21	R13C-TYP-1.2	12/21/90	3.2 U	3.6 U	3.0 U	3.0 U	46%
245.22.23	R13B-TYP-1.2	2/28/91	14.7 B	6.8 B	4.18	5.5 B	82%
245.24.25	R130-TYP-1.2	2/28/91	18.3 B	4.3 B	2.3 8	3.3 B	82%
245.26	R13A.TYP	2/28/91	13.18	8.48	4.4 B	7.0 B	89%
245.27	R100-TYP	2/28/91	6.38	2.2 B	3.7 B	14.0 B	92%
245.28	B 10A-TYP	2/28/91	11.4 B	4.7 8	· 2.5 B	9.5 B	85%
245.29	R10C-TYP	2/28/91	11.0 B	3.9 B	2.8 B	2.2 U	83%
245.30.31	R108-TYP-1.2	2/28/91	6.18	5.7 B	3.0 B	4.18	87%
245.32	R78-SPA	12/21/90	3.3 U	3.6 U	3.1 U	3.1 U	51%
245.33	R1B SPA	12/21/90	3.3 U	3.7 U	3.1 U	3.1 U	26%
245:34.35.36 REP 1	R9B SCI-1.2.3 REP 1	1/15/91	3.2 U	6.58	2.9 U	2.9 U	95%
245.17	R9C-SCI	1/15/91	3.8 U	8.48	3.6	5.0	93%
245.38.39	R9D-SCI-1,2	1/15/91	5.1 U	14.7 B	6.7	4.6 U	84%
245.40 41.42 REP 1	R9A-SCI-1,2,3 REP 1	1/15/91	6.1	8.3B	4 .6	6.4	85%
	R7C-SAL-1	1/15/91	8.2	9.6B	5.6	6.1	% 68
245-44	H7.SAL.2	1/15/91	7.4 U		131.8	25.1	%68
245-45	R5C-SAL-1	1/15/91	2.9 ∪	6.08	2.7 U	18.1	85%
245-46	R5C-SAL-2	1/15/91	U 6.9	16.5 B	12.9	6.3 U	%68 ************************************
245.47	R4D-SAL-1	1/15/91	3.2 U	7.0 B	2.9 U	17.6	8 8%
245.48	R40-SAL-2	1/15/91	7.4 U	18.18	11.8	17.7	92%
245.49	R7D-SAL-1	1/15/91	5.8 U	12.6 B	13.2		91%
245.50	R7D-SAL-2	1/15/91	0.9	13.3 B	16.6	5.4 U	%6 8
PROCEDURAL BLANK		12/21/90	5.8 U	0.4 U	6.4 U	5.3 U	38%
PROCEDURAL BLANK	¥	1/15/91	4.2 U	7.9	3.8 U	3.8 U	85%
PROCEDURAL BLANK		2/28/91	4.7	6.5	2.6	5.9	75%
a indicates analyte detected in blank.	Note.	blanks for specifi	blanks for specific samples are identified by corresponding "extraction date."	fied by correspondly	ng "extraction date		

B indicates analyte detected in blank. Note, blanks for specific samples are identified by corresponding U indicates analyte not detected at detection limit shown

MATRIX SPIKE RECOVERIES

(Concentrations in ug/kg Dry Weight, ppm)

		TETRABUTYL TIN	TRIBUTYL TIN	DIBUTYL	MONOBUTY. TIN	SURROGATE RECOVERY TRIPENYLTIN
Sample Concentration: R9B-SCI-1 Amount Spiked: Amount Recovered: Percent Recovery:	R9B-SCI-1,2,3 REP 1 12/21/90	3.2 U 893.0 600.1 67%	6.5 893.0 701.1 78%	2.9 U 893.0 692.2 77%	2.9 U 893.0 194.1 22%	92% 87%
Sample Concentration: R1A-SPA Amount Spiked: Amount Recovered: Percont Recovery:	1/15/91	4.7 U 1087.0 824.5 75%	9.2 1087.0 885.4 81%	4.3 U 1087.0 852.3 78%	19.8 1087.0 178.6 15%	89% 87%

PLANT PCB RESULTS (Concentrations in ug/Kg Dry Weight, ppb)

SURPOGATE	3	92 %	8	68 %	65 %	26 %	_	-	72 %	% 62	153 %		% 98			78 %	89%	% 66	46 %	% 29	% 66	51 %	75 %	% 19	82 %		77 %	36 8			% 99	78 %	% 99	85 %	83 %	83 %	95 %	7	82 %	% 02	86 %
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Aroclor-		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
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Aroclor-		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	5	100	100	100	100	100	100	100	100	100	100	100
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Aroclor-		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	00	100	100	9	100	100	100	100	100	100	100	100	100
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Aroclor-		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	00	9 5	100	100	100	100	100	2	100	100	2	100	100	₽
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Aroclor-		2	2	2	2	5	2	10	2	2	2	2	9	9	9	2	2	2	2	2	2	2	•	\$	2	2	2	₽ :	₽ :	2 :	9	-	2	2	2	2	2	. 10	2	2	10
% Molst.		٤		82	91	80	82	95	Ź	73	91	72	83	73	88	ž	98	88	81	90	88	82	81	82	80	86	¥	77	080	≨	82	≨	75		03	7.4	68	16		80	8
Date Anal'd		12/3/90	12/3/90	12/3/90	12/3/90	12/3/90	12/3/90	12/4/90	12/4/90	12/4/90	12/4/90	12/4/90	12/4/90	12/4/90	12/4/90	12/4/90	12/4/90	12/4/90	12/4/90	12/4/90	12/4/90	12/4/90	12/4/90	12/4/90	12/4/90	12/5/90	12/5/90	12/5/90	12/5/90	12/5/90	12/5/90	12/5/90	12/5/90	12/5/90	12/5/90	12/5/90	12/5/90	12/5/90	12/5/90	12/6/90	12/6/90
Date Exi'd		06/82/11	11/28/90	11/28/90	11/28/90	11/28/90	11/28/90	11/28/90	11/28/90	11/28/90	11/28/90	11/28/90	11/28/90	11/28/90	11/28/90	11/29/90	11/29/90	11/29/90	11/29/90	11/29/90	11/29/90	11/29/90	11/29/90	11/29/90	11/29/90	11/29/90	11/29/90	11/29/90	11/29/90	11/30/90	11/30/90	11/30/90	11/30/90	11/30/90	11/30/90	11/30/90	11/30/90	11/30/90	11/30/90	11/30/90	11/30/90
Sponsor Code	7 774	BLANK 1	H5B-SPA	R4B-SPA	H7A-SPA	R2A-SPA-1,2,3	R1A-SPA	R2B-SPA-1,2	R2B.SPA-1,2	RID-SAL-1	RID-SAL-2	RIC-SAL-1,3	RIC-SAL-2.4	R2D-SAL-1,3	R2D-SAL-2,4	BLANK 2	R13C-TYP-1,2	R138-TYP-1,2	R13D-TYP-1,2	R13A-TYP	R10D-TYP	R10A.TYP	R10C-TYP	R108-TYP-1,2	R78-SPA	R1B-SPA	R1B SPA	R9B-SCI-1,2,3	R9C-SCI	BLANK 3	R9D-SCI-1,2	R9D-SCI-1,2	R9A-SCI-1,2,3	R7C.SAL-1	R7.SAL.2	R5C-SAL-2	H5C-SAL-1	R4D-SAL-1	R4D.SAL.2	R7D-SAL-1	R7D-SAL-2
Client Sample ID	7 21 4	BLANK 1	245.1	245.2	245.3	245-4,5,6	245.7	245-8,9	245-8,9	245-10	245-11	245-12,14	245-13,15	245-16,18	245-17,19	BLANK 2	245-20,21	245-22,23	245-24,25	245.26	245-17	245-28	245.29	245-30.31	245.32	245.33	245-33	245.34,35,36	245.37	BLANK 3	245.38,39	245-38,39	245-40,41,42	245-43	245.44	245-45	245.46	245-47	245-48	245.49	245.50

U indicates analyte not detected above detection limit shown. NA indicates not applicable

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PESTICIDE RESULTS (Concentrations in ug/Kg Dry Weight, ppb)

S	Sponsor	Date	Date			Alpha-	Beta-	Delta-	Gamma-			
Code Ext'd	Ext.		Anal'd	% Moist.	Aldrin	E C	BHC	B C	표	Chlordane	4 4:-000	
BLANK 1 11/28/90	11/28/9	0	12/3/90	¥	11 06	00	11 00	-				
R5B-SPA 11/28/90	11/28/9	0	12/3/90	. 60	2002	200			.	000	20 O	
R4B.SPA 11/28/90	11/28/9	_	12/3/90	8	0	200	2 2 2	2 2		000		
	11/28/90	_	12/3/90	18	20 U	20 C	n 02	200	0 0 0		0 0 0	
R2A-SPA-1,2,3 11/28/90	11/28/90	_	12/3/90	80	0	20 U	20 O	20 02		- -		
_	11/28/90	_	12/3/90	8 2	0	20 U	20 U	20 U	20 O	200		
ω. •-	11/28/90	_	12/4/90	8	20 U	20 U	20 U	20 U) C		
- -	11/28/90	_	12/4/90	≨		20 U	20 U	20 U		200	0 0 0 0 0	
_	11/28/90	_	12/4/90		20 U	20 U	20 U	20 U		2 0 0 0		
_	11/28/90		12/4/90		20 U	20 U	20 U	20 U		200	2 2 2	
<u>. </u>	11/28/90		12/4/90	72	20 U	20 U	20 U	20 U	20 U	30 00		
	11/28/90		12/4/90		20 C	20 U	20 U	_	_	30 00		
- 1	11/28/90		12/4/90	73	20 U	20 U	_	20 U	20 U	30 08	20 1	
2,4	11/28/90		12/4/90	60	20 N		20 U	_	20 U	30 0	20 02	
= :	11/29/90		12/4/90	≨	20 U	_	_	20 U	_	308	_	
-	11/29/90		12/4/90	86	20 U	20 U	20 U	_	_	200	0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
= :	11/29/90		12/4/90		20 U		20 U	_	_	300		
-1,2	11/29/90		12/4/90	81	20 N		20 U	20 U	0	300		
-	11/29/90		12/4/90	0	20 U		_	_	0	_	_	
-	11/29/90		12/4/90	88	20 U		20 U	_	20 U	_		
- 1	11/29/90		12/4/90	S	20 C	20 U	_	_	-	_	_	
	11/29/90		12/4/90	6	20 C			_	20 U	_	20 20	
R108:11F-1,Z 11/29/90	11/29/90		12/4/90	80 (_	_	20 U	20 U	20 U	_	_	
- •	06/62/11		12/4/90			70 C		0	_		20 U	
07,007,11 07,007,11	06/62/11		12/5/90	9	20 C	_		0	_	30 U	20 U	
			06/2/20	₹	50 O		20 N	0	_	_	20 U	
	11/29/90		12/3/90	` °		50 C		0	20 N		20 U	
-	11/30/90		12/5/90		0 0 0	0 0 0			_	30 U	20 U	
1.12	11/30/90		12/5/90	£				20 C	_		20 U	
	11/30/90		12/5/90	N N			0 20	- ·	70 C		_	
	11/30/90		12/5/90	•	2 6	_		.	_		_	
•	11/30/90		12/5/90	9 6				20 U	_		20 U	
	11/30/90		12/5/90			0 2		_	_		20 U	
•	00/00/11		12/3/80	7 F	0 0	O 2	20 C	0	20 U		_	
- •	00/00/11		12/3/80	7	_	20 U		20 U	20 U		20 11	
	06/06/11		12/5/90		20 O	20 U		0	20 U		200	
_	11/30/90	_	12/5/90	16	20 C	20 C		20 U	20 U	= 0E	2 6	
~ .	11/30/90		12/5/90	8	20 U	20 U	20 U	20 U	20 C		2 0	
~	11/30/90		12/6/90		20 U	20 U	20 U	20 U	20 11		3 6	
H7D-SAL-2 11/30/90	11/30/90		12/6/90	<u>ග</u>	20 U	20 N	20 U	20 U	20 U	3000	20 02	
) 	

U indicates analyte not detected above detection limit shown, NA indicates not applicable

PESTICIDE RESULTS (Concentrations in ug/Kg Dry Weight, ppb)

									1		1					1
Client Sample ID	Sponsor Code	Date Ext'd	Date Anal'd	4,4*DDE	4,4'-DDT		Dieldrin		sulfan 1		suffan II		Sulfate		Endrin	ĺ
22.4	O ANE	00/00/44	00/6/64	1 06	96	=	90	=	20	=	20	-	20	ב	20	>
BLANK I	מים סים	06/07/11	00/0/01	2 6		=	0	. =	200	=	20	=	20	_	670	
245-1	And and	11/28/90	12/3/90	200	0 0) =	50	, 5	20	· -	50	· >	20	>	20	ם
243-2	R7A.SPA	11/28/90	12/3/90	20 C	20) 0	50	_	20	-	20	-	20	-	20	
245.4 5 6	R2A-SPA-1.2.3	11/28/90	12/3/90	20 C	20		20	>	20	-	20	-	20		20	
245-7	R1A-SPA	11/28/90	12/3/90	20 C	20	-	20	-	20	>	20	-	20	-	20	>
245.8.9	R2B-SPA-1,2	11/28/90	12/4/90	_	N	>	20	-	20	>	20	-	20		20	
245.8 9	R2B-SPA-1,2	11/28/90	12/4/90		W	>	20	-	50	-	20	-	20		20	
245-10	RID-SAL-1	11/28/90	12/4/90			_	20	-	20	>	20	-	20		20	
245.11	RID-SAL-2	11/28/90	12/4/90	20 U	~		20	-	20	>	20	-	20		20	
245-12.14	RIC-SAL-1,3	11/28/90	12/4/90		_		20	-	20	-	20	-	20	-	20	_
245-13-15	RIC-SAL-2.4	11/28/90	12/4/90		_	>	20	⊃	20	-	20	-	20		20	
245.16.18	R2D-SAL-1.3	11/28/90	12/4/90		-		20	-	20	-	20	-	20	>	20	_
245.17.19	R2D-SAL-2.4	11/28/90	12/4/90	20 U	-	_	20	-	20	5	20	-	20		20)
RI ANK 2	BLANK 2	11/29/90	o.		_	_	20	-	20	-	20	-	20	>	20	
245.20.21	R13C-TYP-1.2	11/29/90	g,	20 U	_	_	20	-	20	>	20	-	20	>	20	
245.22.23	R13B-TYP-1,2	11/29/90	12/4/90		_	_	20	-	. 20	ם	20	-	27		20	
245.24.25	R130-TYP-1.2	11/29/90	12/4/90	20 U	20	_	20	>	20	>	20	-	20	-	20	-
245-26	R13A-TYP	11/29/90	12/4/90	20 U	2(5	20	>	20	-	20	-	20	> :	20	
245.17	R10D-TYP	11/29/90	12/4/90	30 U		_	20	-	20	>	20	-	20		20	- :
245.28	R10A-TYP	11/29/90	12/4/90	20 U	20	_	20	-	20	-	20	-	20	>	20	_
245.29	R10C-TYP	11/29/90	12/4/90	20 C	20	>	20	-	20	>	20	-	20		50	
245.30.31	R108-TYP-1,2	11/29/90	12/4/90	7 OZ	2	_	20	-	50)	20	- :	50		20	> :
245.32	R78-SPA	11/29/90	12/4/90	7 0Z	2	_	20	>	20	-	20)	20		50	5 :
245.33	R1B.SPA	11/29/90	12/5/90	20 C	3	>	20	-	20	-	20	-	50		50	- :
245.33	R18-SPA	11/29/90	12/5/90	20 L	2		20	=	20	>	20)	20		50	- :
245-34.35.36	R5B-SCI-1,2,3	11/29/90	12/5/90	20 L	2	_	20	>	20	>	20)	20		20	- :
245.37	R9C-SCI	11/29/90		7 70 70	2	_	20	-	20	> :	50	- :	50		50	
BLANK 3	BLANK 3	11/30/90		_		_	20	> :	50	-	50	> :	50		50	
245.38.39	R90-SCI-1,2	11/30/90	_			_	50	- :	20	> :	20	> :	20		20	> :
245-38,39	R9D-SCI-1,2	11/30/90	-)	20	- :	20	- :	20	- :	20	> :	20	
245-40,41,42	R9A-SCI-1,2,3	11/30/90	•			_	20	> :	20)	20	> :	0 7		בא הא	
245-43	R7C-SAL-1	11/30/90				O	20	> :	50	> :	20	> :	20		50	o :
245.44	R7.SAL-2	11/30/90	-			0	20	- :	50)	20)	50		20) :
245-45	R5C-SAL-2	11/30/90	_			0	. 50	- :	50)	50	- :	50		500	> :
245.46	R5C-SAL-1	11/30/90	-			0	20	-	20	> :	20	> :	20		50) :
245.47	R4D.SAL.1	11/30/90	_			ာ : ဝ	50	- :	50	-	50	- :	20	=	5	> :
•	R4D.SAL-2	11/30/90	12/5/90			0	20	-	20	>	20	> :	20		2)
_	R7D-SAL-1	11/30/90	-			0	20	> :	50)	20	- :	2	> :	5)
	R7D-SAL-2	11/30/90	12/6/90			0	20	>	20	>	20)	20		5	-
		•														

U indicates analyte not dotected above dotection limit show NA indicates not applicable

PESTICIDE RESULTS (Concentrations in ug/Kg Dry Weight, ppb)

	1	*	% ;	* :	% :	* :	% :	*	%	%	% :	۶:	۶ ۶	۶ ۶	٤ ۽	۶ ۶	٤ ;	: ×	: ×	:	۶ ۶	: ×	: %	%	*	*	%	%	%	* :	*	%	*	*	%	×	* :	۶ :	×
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Toxaphene		200	200	200	200	200	200	200	200	200	200	200	000	200	200	200	000	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	000	200
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Anal'd	12/3/90	3/9	12/3/90	6/6/	9/6	9	14/9	0/1	6/7/	4/9	6 /	6	12/4/90	12/4/90	12/4/90	12/4/90	12/4/90	12/4/90	12/4/90	14/9	12/4/90	12/4/90	12/4/90	12/4/90	12/5/90	12/5/90	12/5/90	12/5/90	12/5/90	12/5/90	12/5/90	12/5/90	12/5/90	5/9	12/5/90	12/5/90	12/5/90	12/6/90	10/2/01
Ext'd	11/28/90	11/28/90	11/28/90	11/28/90	8	11/28/90	11/28/90	2	8	· 🗟	~	11/28/90	11/28/90	11/28/90	11/29/90	11/29/90	11/29/90			11/29/90						06/62/11	11/29/90	11/30/90	11/30/90	11/30/90	11/30/90	11/30/90	11/30/90	11/30/90	11/30/90	6/0	6	11/30/90	2
Code	BLANK 1	R5B-SPA	R4B SPA	R7A-SPA	R2A-SPA-1,2,3	R1A-SPA	R2B.SPA-1.2	R2B.SPA-1.2	RID-SAL-1	RID-SAL-2	RIC-SAL-1,3	RIC.SAL-2,4	R2D-SAL-1,3	R2D.SAL-2,4	BLANK 2	R13C-TYP-1,2	R138-TYP-1,2	R13D-TYP-1,2	HI3A-TYP	R100.TYP	R10A.TYP	R10C-TYP	H108-1YP-1,2	M/8:0PA	A IB SPA	Dog COL 4 2 2	B ₁ C. SC: 1,2,3	BLANK 3	R9D-SCI-12	R9D-SCI-1,2	R9A-SCI-1 2 3	R7C-SAL-1	R7.SAL.2	R5C-SAL-2	R5C-SAL-1	R4D.SAL-1	R4D-SAL-2	R7D.SAL.1	B70.541.9
Sample ID	BLANK 1	245-1	245.2	245-3	245-4,5,6	245.7	245-8,9	245.8.9	245.10	245.11	245-12,14	245-13,15	245-16,18	245-17,19	BLANK 2	245-20,21	245.22,23	245-24,25	245.26	245.17	245.28	245.29	245-30.31	245.32	245.33	245.34 35 36	245.37	BLANK 3	245-38,39	245-38,39	245.40.41.42	245-43	245.44	245.45	245.46	245.47	245-48	245.49	245.50

U indicates analyte not detected above detection limit show NA indicates not applicable

PESTICIDE MATRIX SPIKE RECOVERIES

0	₹ ₹	₹ ₹	\$ \$
4,4'-DC			
Chlordane 4,4'-DDD	\$ \$	\$ \$	\$ \$
	\$ \$	\$ \$	\$ \$
Gamma- BHC			
ė 0	\$ \$	\$ \$	\$ \$
Delta- BHC	4 4		44
Beta- BHC	¥ ¥	X X	22
	\$ \$	ž ž	\$ \$
Alpha- BHC			
	* *	% %	
Aldrin	71	79 102	105
% Mofst.	\$ \$	\$ \$	≨ ≨
Date Anal'd	12/3/90 12/3/90	12/5/90 12/5/90	12/5/90 12/5/90
Date Ext'd	11/28/90 12/3/90 11/28/90 12/3/90	11/29/90 12/5/90 11/29/90 12/5/90	11/30/90
Sponsor Code	R2A-SPA-1,2,3 R2A-SPA-1,2,3	R9B-SCI-1,2,3 R9B-SCI-1,2,3	R9A-SCI-1,2,3 R9A-SCI-1,2,3
Client Sample ID	245-4,5,6 245-4,5,6	245-34,35,36 245-34,35,36	245-40,41,42 245-40,41,42

PESTICIDE MATRIX SPIKE RECOVERIES

	₹ ₹	₹ ₹	\$ \$
Endrin			
	≨ ≨	\$ \$	≨ ≨
Sulfate			
	≨ ≨	₹ ₹	≨
Endo- sultan II			
	\$ \$	\$ \$	₹ ₹
Endo- sulfan			
	4 70 80 80 % %	4 4 8 % %	
Dieldrin	4 rv	40	8 6 4 5
	≨ ₹	≨≨	≨≨
4,4'-DDT			
	₹ ₹	\$ \$	≨≨
4.4.DDE			
Date Anal'd	12/3/90 12/3/90	12/5/90 12/5/90	12/5/90 12/5/90
Date Ext'd	11/28/90 12/3/9 11/28/90 12/3/9	11/29/90 12/5/9 11/29/90 12/5/9	11/30/90 12/5/9 11/30/90 12/5/9
Sponsor Code	R2A-SPA-1,2,3 R2A-SPA-1,2,3	R9B-SCI-1,2,3 R9B-SCI-1,2,3	R9A-SCI-1,2,3 R9A-SCI-1,2,3
Client Sample ID	245-4,5,6 245-4,5,6	245-34,35,36 245-34,35,36	245-40,41,42 245-40,41,42

PESTICIDE MATRIX SPIKE RECOVERIES

	Sponsor Code	Date Ext'd	Date Anal'd	Endrin Aldohyde	Heptachlor	Heptachlor Epoxide	Methoxy- chlor		Toxaphene	DBC
R2A-SPA-1,2,3 R2A-SPA-1,2,3		11/28/90 11/28/90	12/3/90 12/3/90		NA NA		NA NA	≨≨	200 NA 200 NA	NA 79
R9B-SCI-1,2,3 R9B-SCI-1,2,3		11/29/90 11/29/90	12/5/90 12/5/90		NA NA NA		A A	£ £	200 NA 200 NA	46 70 %
R9A-SCI-1,2,3 R9A-SCI-1,2,3		11/30/90 11/30/90	12/5/90 12/5/90				4 4	\$ \$	200 NA 200 NA	% 65 %

BUTYLTINS IN SEDIMENTS, PLANTS & TISSUE Sponsor: SIMMER (McGUFFIE)

(Concentrations in ug/kg dry weight)

277. 1H SED03-CB 75.47 123.0 1.9 U 3.2 5.8 2.1 277. 2 SED07-CM 98.55 131.6 2.9 2.0 9.6 2.1 277. 4.H SED07-CM 73.4 13.3 1.2 U 3.9 1.7 1.2 U 277. 5.H SED10-CB 75.68 134.1 1.5 U 3.6 1.7 1.2 U 277. 5.H SED10-CB 75.68 134.1 1.5 U 3.6 1.7 1.2 U 3.7 1.4 U 1.7 1.2 U 1.7 1.2 U 3.0 1.7 1.2 U	MSL Code	Sponsor Code	Tripentyl % Surrogate	Pentylbutyl % Internal	Tetra	Tributyl	Dibutyl	Monobutyl
2 SEDOT-MH 74.94 133.6 13.0 2.3 2.0 9.6 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5		SED09.CB	76.47	•		c	c	
3.H SED01-MIN 74.94 133.6 1.23 2.0 14.1 4.H SED01-CM 73.13 13.16 1.20 2.3 1.4 5.H SED01-CM 75.64 122.7 2.0 2.3 1.4 7.H SED04-CM 75.64 122.7 2.0 2.3 1.4 8.H SED14-BH 73.00 140.4 13.0 3.3 1.8 1.9 10-R SED04-CM 75.64 122.7 2.0 2.3 1.4 0.9 <td< td=""><td></td><td>SED07.CM</td><td>08 55</td><td>121.6</td><td></td><td>9 0</td><td></td><td>Ö (</td></td<>		SED07.CM	08 55	121.6		9 0		Ö (
5.8 Control 73.33 13.33 13.00 2.33 1.4 U 5.8 75.68 134.1 1.5 U 3.5 1.4 U 5.8 75.68 134.1 1.5 U 3.5 1.6 U 5.8 75.68 134.1 1.5 U 3.6 1.6 U 6.8 75.68 142.2 2.0 2.3 1.4 U 9.8 75.35 142.5 2.0 2.3 1.4 U 10.8 85004-CM 6.65 127.5 1.4 U 3.1 2.0 11.0-R 85004-CM 148.81 142.4 0.5 2.6 3.6 1.4 U 11.0-R 85004-CM 148.81 142.4 0.5 2.6 3.6 1.4 U 11.3-R 85000-CM 148.81 142.4 0.5 2.6 3.6 1.4 U 11.3-R 85000-CM 143.9 143.9 2.0 1.4 U 3.1 2.0 1.4 U 3.1 2.0 1.4 U 3.1 1.4 U <td></td> <td>SEDO1.MB</td> <td>20:00</td> <td>9.1.0</td> <td>1.04</td> <td>) c</td> <td></td> <td></td>		SEDO1.MB	20:00	9.1.0	1.04) c		
SEDIO-CB 75.8 137.3 15.0 3.1 1.0 6-R SEDIO-CB 75.6 132.7 2.0 2.3 1.4 U 7-R SEDIO-CB 75.6 122.7 2.0 2.3 1.4 U 9-R SEDI-CB 75.0 140.4 1.3 U 3.3 1.4 U 9-R SEDI-CB 75.0 142.5 0.9 U 33.4 0.9 U 11-R SEDOR-CM 18.6 127.5 1.4 U 3.1 2.0 11-R SEDOR-CM 83.68 135.9 0.8 U 1.3 2.0 13-R SEDWRO9-CM 83.68 135.9 0.8 U 1.3 0.9 U 13-R SEDWRO9-CM 83.68 135.9 0.8 U 1.3 0.9 U 13-R SEDWRO9-CM 83.68 135.9 0.8 U 1.3 0.9 U 13-R SEDWRO9-CM 83.68 135.9 0.8 U 1.3 0.9 U 14 SEDWROS-CM 83.68 13.6 <td></td> <td>SED05.CM</td> <td>73.13</td> <td>197.0</td> <td>5; +</td> <td>, c</td> <td></td> <td></td>		SED05.CM	73.13	197.0	5; +	, c		
6-B SED13-CF 67.73 142.8 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9		SED10-CB	75.68	134.1		- u		
7.H SED08-CM 75.64 122.7 2.0 2.3 1.4 U 9.H SED14-BH 73.00 140.4 13.0 3.5 1.8 U 9.H SED14-BH 73.00 142.5 1.9 U 3.3 1.9 U 10-H SED02-CM 148.81 142.5 1.4 U 3.3 1.9 U 11 - SED02-CM 148.81 142.4 0.5 2.6 3.6 1.4 U 11 - SED02-CM 148.81 142.4 0.5 2.6 3.6 1.4 U 11 - SED02-CM 148.81 142.4 0.5 2.6 3.6 1.4 U 13 - BUX-C 13.6 133.6 1.4 U 3.0 2.6 1.4 U 15 - BUK-C 14.6 14.6 2.4 4.8 2.2 2.4 4.8 2.2 1.1 U 3.0 1.8 3.6 1.1 U 3.1 3.0 3.6 1.1 U 3.0 3.6 1.1 U 3.1 3.0 3.6 3.6 3.6 3.6		SED13-CF	67.43	142.8		. .		- C
B-R SED14-BR 73.00 140.4 1.3 U 3.5 1.8 10-R SED10-CM 75.35 142.5 0.9 U 33.4 0.9 U 11-B-SED02-CM 48.81 142.4 0.5 2.6 3.6 12-B SED02-CM 48.81 142.4 0.5 2.6 1.4 U 13-B SED02-CM 48.81 145.5 2.4 4.5 2.0 13-B SED03-CM 83.68 135.9 0.8 U 1.3 0.9 U 13-B SED04-CM 18.81 145.5 2.4 4.8 2.2 14 0.84-SAL 119.99 140.7 3.2 4.8 2.2 16 0.8C-SAL 19.99 140.7 3.2 3.1 6.0 19.0 17 0.4C-SAL 119.99 140.7 3.2 3.1 1.2 1.2 2.2 1.1 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2		SED08.CM	75.64	122.7		6.9	1.4.1	13.0
9-H SED11-CB 75.35 142.5 0.9 U 33.4 0.9 U 10-R SED04-CM 86.65 127.5 1.4 U 3.1 2.0 1.1		SED14-BR	73.00	140.4		3.5	. 8.	2.4
10-R SED04-CM 86.65 127.5 1.4 U 3.1 2.0 11 SED04-CM 148.81 142.4 0.5 2.6 3.6 1 13.6 3.0 2.6 3.6 1 14.0 13.8 3.8 18.8 13.8 3.0 2.6 1.4 U 3.1 3.6 3.0 2.6 1.4 U 13.8 SED03-CM 83.68 135.9 0.8 U 1.3 0.8 U 1.3 0.8 U 1.4 U 1.3 0.8 U 1.4 U 1.3 0.8 U 1.4 U 1.3 U 1.4 C.S.AL 100.94 155.1 2.4 4.8 2.2 3.1 16 0.8 C.S.AL 11.9 140.7 3.2 6.0 11.1 2.1 U 1.8 U 1.9 140.7 3.2 6.0 11.1 2.1 U 1.8 U 1.9 140.7 3.2 3.1 4.8 12.1 2.1 U 1.8 U 1.9 14.4 2.2 U 4.1 2.1 U 1.8 U 1.9 U 1.8 U 1.8 U 1.9 U 1		SED11-CB	75.35	142.5	0.9 U	33.4		0.9 U
11 SED02-CM 148.81 142.4 0.5 2.6 3.6 12-R SED03-CM 83.58 133.6 3.0 2.6 1.4 U 13-R SED03-CM 83.68 135.9 0.8 U 1.3 0.8 U 14 SED03-CM 83.68 135.9 2.4 4.5 2.2 3.2 15 146SAL 100.94 155.1 2.4 4.8 2.2 3.1 16 08C-SAL 119.99 140.7 3.2 6.0 19.0 6.0 17 04C-SAL 119.99 140.7 3.2 3.1 6.6 11.1 20-R 116.SCI 19.90 144.4 2.2 3.1 6.6 11.1 20-R 116.SCI 19.0 144.4 2.2 3.1 6.6 15.1 20-R 116.SCI 129.64 136.6 111.0 5.6 5.6 5.6 2.6 2.6 2.6 2.6 2.6 2.6 2.6	277- 10-R	SED04-CM	86.65	127.5	1.4 U	3.1	2.0	2,3
12-R SED03-CM 83.58 133.6 3.0 2.6 1.4 U 13-R SEDWR09-CM 83.68 135.9 0.8 U 1.3 0.8 U 14 08A-SAL 128.66 145.5 2.4 4.5 2.2 5.1 15 14C-SAL 10.94 134.9 2.0 3.5 11.1 2.2 11.1 2.2 11.1 2.2 11.1 2.2 11.1 2.2 11.1 2.2 11.1 2.2 11.1 2.2 11.1 2.2 11.1 2.2 11.1 2.2 11.1 2.2 11.1 2.2 11.1 2.2 11.1 2.0 11.1 2.2 11.1 2.1 12.1 2.1 12.1 2.1 12.1 2.1 12.1 2.1 12.1 2.1 2.1 2.1 2.1 2.1 2.1 12.1 2.2 2.1 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2	-	SED02-CM	148.81	142.4	0.5	2.6	3.6	17.0
13-H SEDWR09-CM 83.68 135.9 0.8 U 1.3 0.8 U 14 08A-SAL 128.66 145.5 2.4 4.5 2.2 15 14C-SAL 100.94 155.1 2.4 4.8 2.2 16 08C-SAL 19.99 140.7 3.2 6.0 19.0 17 04C-SAL 119.99 140.7 3.2 6.0 19.0 18 03C-SAL 119.99 140.7 3.2 6.0 19.0 19 91.91 126.7 2.2 3.1 6.6 11.1 19H 11C-SCI 80.40 144.4 2.2 3.1 6.6 12.1 20-R 114SCI 144.4 2.2 U 4.1 2.1 U 2.1 21-R 118.50 144.4 2.7 5.2 5.6 5.6 22-R 148.50 144.4 2.7 5.2 2.6 2.6 2.6 2.6 2.6 2.6 2.6	_	SED03.CM	83.58	133.6	3.0	2.6		2,9
14 08A-SAL 128.66 145.5 2.4 4.5 2.2 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 2 4 8 2.2 3 4 3 2 3 3 4 3 1 <td>_</td> <td>SEDWR09.CM</td> <td>83.68</td> <td>135.9</td> <td>0.8 U</td> <td>1.3</td> <td>0.8 U</td> <td>0.7 U</td>	_	SEDWR09.CM	83.68	135.9	0.8 U	1.3	0.8 U	0.7 U
15 14C-SAL 100.94 155.1 2.4 4.8 2.2 35.1 16 08C-SAL 98.79 134.9 2.0 3.5 11.1 24.6 17 04C-SAL 119.99 140.7 3.2 6.0 19.0 64.3 18 03C-SAL 91.91 126.7 2.2 3.1 6.6 15.6 BLK-2 83.66 136.6 3.3 4.8 12.1 24.7 19R 11C-SCI 80.40 144.4 2.2 U 4.1 2.1 24.7 20-R 114-SCI 76.59 118.9 4.1 U 5.6 5.2 2.6 9.5 21 11B-SCI 129.64 136.8 5.5 5.2 2.6 5.5 2.6 5.5 2.6 5.5 3.7 3.7 3.7 3.7 3.7 3.7 3.7 3.7 3.7 3.7 3.7 3.2 3.2 3.6 6.6 3.7 3.6 6.6 3.7	_	08A-SAL	128.66	145.5	2.4	4.5	. 2.2	53.5
16 08C-SAL 98.79 134.9 2.0 3.5 11.1 24.6 17 04C-SAL 119.99 140.7 3.2 6.0 19.0 64.3 18 03C-SAL 91.91 126.7 2.2 3.1 6.6 15.6 BLK-2 83.66 136.6 3.3 4.8 12.1 24.7 19R 11C-SCI 80.40 144.4 2.2 U 4.1 2.1 4.4 20-R 11A-SCI 76.59 118.9 4.1 U 5.6 3.7 2.1 4.4 2.2 U 4.1 U 4.4 4.4 4.4 2.1 U 4.4 2.2 2.6 9.5 5.2 2.6 9.5 5.1 9.5 6.5 9.5 6.1 9.5 6.1 9.5 6.1 9.5 6.1 9.5 6.1 9.5 6.1 9.5 9.5 6.1 9.5 9.5 6.1 9.5 9.5 9.5 9.5 9.5 9.5 9.5 <	_	14C-SAL	100.94	155.1	2.4	4 .8	2.2	35.1
17 04C-SAL 119.99 140.7 3.2 6.0 19.0 64.3 18 03C-SAL 91.91 126.7 2.2 3.1 6.6 15.6 BLK-2 83.66 136.6 3.3 4.8 12.1 24.7 19R 11C-SCI 80.40 144.4 2.2 U 4.1 2.1 U 4.4 20-R 11A-SCI 76.59 118.9 4.1 U 5.6 5.6 3.7 21 11A-SCI 129.64 136.8 5.2 2.6 5.6 3.7 5.1 2.4 3.7 5.1 4.4 3.7 5.1 2.6 3.5 3.7 5.1 3.7 5.1 3.7 3.7 3.2 2.6 3.5 3.5 3.7 3.5 3.5 3.7 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.	_	08C-SAL	98.79	134.9	2.0	3.5	11.1	24.6
18 03C-SAL 91.91 126.7 2.2 3.1 6.6 15.6 BLK-2 83.6 136.6 3.3 4.8 12.1 24.7 19R 11C-SCI 80.40 144.4 2.2 U 4.1 5.6 5.6 3.7 20-R 11B-SCI 129.64 136.8 5.5 5.6 5.6 3.7 21 11B-SCI 129.64 136.8 5.5 2.6 5.6 3.7 22-R 14B-SCI 129.64 136.8 5.5 2.6 5.6 3.7 5.1 23 04A-SPA 152.9 64.4 2.7 5.2 2.6 5.6 5.6 5.6 5.6 5.6 9.5 9.	-	04C-SAL	119.99	140.7	3.2	6.0	19.0	64.3
BLK-2 83.66 136.6 3.3 4.8 12.1 24.7 19R 11C-SCI 80.40 144.4 2.2 U 4.1 2.1 U 4.4 20-R 11A-SCI 76.59 118.9 4.1 U 5.6 5.6 3.7 4.4 21 11B-SCI 129.64 136.8 5.5 5.2 2.6 5.6 3.7 5.1 3.7 5.1 4.4 4.4 4.4 4.4 4.4 4.4 4.4 4.4 4.4 3.7 5.1 NA 5.2 5.2 5.2 5.2 5.2 5.2 3.7 5.1 8.5 3.7 5.1 8.5 5.1 8.5 5.1 8.5 5.2 8.5		03C-SAL	91.91	126.7	2.2	3.1	6.6	15.6
19R 11C-SCI 80.40 144.4 2.2 U 4.1 2.1 U 4.4 20-R 11A-SCI 76.59 118.9 4.1 U 5.6 5.6 3.7 5.6 5.6 3.7 5.2 2.6 9.5 21 11B-SCI 129.64 136.8 5.5 5.2 2.6 9.5 5.2 2.6 9.5 9			83.66	136.6		4.8	12.1	24.7
20-R 114-SCI 76.59 118.9 4.1 U 5.6 5.6 5.6 9.5 21 11B-SCI 129.64 136.8 5.5 5.2 2.6 9.5 22-R 03B-SPA 96.66 111.0 3.6 U 8.3 3.7 5.1 23 04A-SPA 152.9 64.4 2.7 5.2 2.5 NA 24 14A-SCI 178.00 44.0 1.2 2.2 1.1 NA 25-R 14D-SAL 81.97 117.4 3.1 U 4.4 3.0 U 5.6 26-R 02C-SAL 88.17 113.4 9.7 6.5 3.5 U 7.1 26-R 02C-SAL 88.17 113.4 9.7 6.5 3.5 U 7.1 27 05D-SAL 74.05 126.2 3.3 4.8 4.4 7.1 28 03D-SAL 67.67 133.7 2.2 U 3.9 2.1 U 10.2 29 08B-SAL		110-501	80.40	144.4	2.2 N	4.1		4.4
21 11B-SCI 129.64 136.8 5.5 5.2 2.6 9.5 22-R 03B-SPA 96.66 111.0 3.6 U 8.3 3.7 5.1 23 04A-SPA 152.9 64.4 2.7 5.2 2.5 NA 24 14A-SCI 178.00 44.0 1.2 2.2 1.1 NA 25-R 14D-SAL 81.97 117.4 3.1 U 4.4 3.0 U 5.6 25-R 14D-SAL 88.17 113.4 9.7 6.5 3.5 U 7.1 26-R 02C-SAL 88.17 113.4 9.7 6.5 3.5 U 7.1 27 05D-SAL 74.01 127.2 54.7 35.8 2.3 7.1 28 03D-SAL 67.67 133.7 2.2 U 3.9 2.1 U 10.2 29 08D-SAL 61.68 122.9 2.3 U 4.0 2.8 2.1 31-R 08B-SAL 50.86		11A-SCI	76.59	118.9	4.1 U	5.6	5.6	3.7 U
22-R 038-SPA 96.66 111.0 3.6 U 8.3 3.7 5.1 23 04A-SPA 152.9 64.4 2.7 5.2 2.5 NA 24 14A-SCI 178.00 44.0 1.2 2.2 1.1 NA 25-R 14D-SAL 81.97 117.4 3.1 U 4.4 3.0 U 5.6 25-R 14D-SAL 81.97 117.4 3.1 U 4.4 3.0 U 5.6 26-R 02C-SAL 88.17 113.4 9.7 6.5 3.5 U 7.1 27 05D-SAL 74.01 127.2 54.7 35.8 2.3 5.3 28 03D-SAL 67.67 133.7 2.2 U 3.9 2.1 U 10.2 29 08D-SAL 61.68 122.9 2.3 U 4.0 2.8 2.1 30 08B-SAL 63.86 115.6 3.6 U 5.6 3.6 U 5.3 31-R 08B-SAL 62.55 121.0 2.9 2.1 U 1.9 32 05A-SPA 70.21 125.0 2.2 U 5.2 2.2 U 2.0 33 05A-SPA 70.21 16.1 1.6 U 3.3 5.		11B-SCI	129.64	136.8	5.5	5.2	2.6	9.5
23 04A-SPA 152.9 64.4 2.7 5.2 2.5 1.1 NA 24 14A-SCI 178.00 44.0 1.2 2.2 1.1 NA 25-R 14D-SAL 81.97 117.4 3.1 4.4 3.0 5.6 26-R 02C-SAL 88.17 113.4 9.7 6.5 3.5 0 7.1 27 05D-SAL 74.01 127.2 54.7 35.8 2.3 7.1 27 05D-SAL 74.05 126.2 3.3 4.8 4.4 7.1 28 03D-SAL 67.67 133.7 2.2 U 3.9 2.1 U 10.2 29 08D-SAL 61.68 122.9 2.3 U 4.0 2.8 2.1 30 08B-SAL 63.86 136.4 3.1 U 5.3 3.1 U 5.9 31-R 08B-SAL 60.86 115.6 3.6 U 5.6 3.5 U 32-1 75.31 <td< td=""><td></td><td></td><td>99.96</td><td>111.0</td><td>3.6 ∪</td><td>8.3</td><td>3.7</td><td>5.1</td></td<>			99.96	111.0	3.6 ∪	8.3	3.7	5.1
24 14A-SCI 178.00 44.0 1.2 2.2 1.1 NA 25-R 14D-SAL 81.97 117.4 3.1 U 4.4 3.0 U 5.6 26-R 02C-SAL 88.17 113.4 9.7 6.5 3.5 U 7.1 27 05D-SAL 74.01 127.2 54.7 35.8 2.3 5.3 28 03D-SAL 74.05 126.2 3.3 4.8 4.4 7.1 29 04D-SAL 67.67 133.7 2.2 U 3.9 2.1 U 10.2 29 04D-SAL 61.68 122.9 2.3 U 4.0 2.8 2.1 30 08B-SAL 63.86 115.6 3.6 U 5.6 3.6 U 6.4 31-R 08B-SAL 90.86 115.6 3.6 U 5.6 3.5 U 6.4 31-R 08B-SAL 90.86 115.6 3.8 U 5.3 3.7 U 8.7 32 03A-SPA 62.55 121.0 2.9 2.1 U 1.9 33 05A-SPA 70.21 125.6 2.2 U 2.2 U 2.2 U 34 R08-SN01 85.92 112.1 1.6 U 3.3 5.0			152.9	64.4	2.7	5.2	2.5	N X
25-R 14D-SAL 81.97 117.4 3.1 U 4.4 3.0 U 5.6 26-R 02C-SAL 88.17 113.4 9.7 6.5 3.5 U 7.1 27 05D-SAL 74.01 127.2 54.7 35.8 2.3 7.1 28 03D-SAL 74.05 126.2 3.3 4.8 4.4 7.1 29 03D-SAL 67.67 133.7 2.2 U 3.9 2.1 U 10.2 29 08D-SAL 61.68 122.9 2.3 U 4.0 2.8 2.1 30 08B-SAL 63.86 136.4 3.1 U 5.9 3.1 U 2.9 31-R 08B-SAL 90.86 115.6 3.6 U 5.6 3.5 U 6.4 31-R 08B-SAL 90.86 115.6 3.8 U 5.3 3.7 U 8.7 32 03A-SPA 62.55 121.0 2.2 U 2.2 U 2.2 U 2.2 U 33 05A-SPA		14A-SCI	178.00	44.0	1.2	2.2	Ξ	¥
26-R 02C-SAL 88.17 113.4 9.7 6.5 3.5 U 7.1 27 05D-SAL 74.01 127.2 54.7 35.8 2.3 5.3 28 03D-SAL 74.05 126.2 3.3 4.8 4.4 7.1 28 03D-SAL 67.67 133.7 2.2 U 3.9 2.1 U 10.2 29 08D-SAL 61.68 122.9 2.3 U 4.0 2.8 2.1 30 08B-SAL 63.86 115.6 3.1 U 5.3 3.1 U 2.9 31-R 08B-SAL 90.86 115.6 3.6 U 5.6 3.6 U 6.4 31-R 05B-SAL 123.8 3.8 U 5.3 3.7 U 8.7 32 03A-SPA 62.55 121.0 2.1 U 2.9 2.1 U 1.9 33 05A-SPA 70.21 125.6 2.2 U 2.2 U 2.0 2.0 34 R08-SN01 85.92 112.1 1.6 U 3.3 5.0 1.5		14D-SAL	81.97	117.4	3.1 U	4.4	3.0 U	5.6
27 05D-SAL 74.01* 127.2 54.7 35.8 2.3 5.3 28 03D-SAL 74.05 126.2 3.3 4.8 4.4 7.1 BLK-4 67.67 133.7 2.2 U 3.9 2.1 U 10.2 29 08D-SAL 61.68 122.9 2.3 U 4.0 2.8 2.1 U 10.2 30 08B-SAL 63.86 115.6 3.1 U 5.3 3.1 U 2.9 31-R 08B-SAL 90.86 115.6 3.6 U 5.6 3.6 U 6.4 31-R 75.31 123.8 3.8 U 5.3 3.7 U 8.7 32 03A-SPA 62.55 121.0 2.9 2.1 U 1.9 33 05A-SPA 70.21 125.6 2.2 U 2.2 U 2.0 34 R08-SN01 85.92 112.1 1.6 U 3.3 5.0 1.5		02C-SAL	88.17	113.4	9.7	6.5	3.5 U	7.1
28 03D-SAL 74.05 126.2 3.3 4.8 4.4 7.1 BLK-4 67.67 133.7 2.2 U 3.9 2.1 U 10.2 2.9 08D-SAL 61.68 122.9 2.3 U 4.0 2.8 2.1 U 10.2 3.0 08B-SAL 63.86 136.4 3.1 U 5.3 3.1 U 2.9 3.1 U 5.3 3.1 U 2.9 3.1 U 5.3 5.0 1.5 5.0 1.5		05D-SAL	74.01	127.2	54.7	35.8	2.3	5.3
BLK-4 BLK-4 08D-SAL 61.68 122.9 2.3 U 4.0 2.8 2.1 2.9 2.9 2.1 U 10.2 2.9 2.1 U 10.2 2.9 2.1 U 2.9 3.1 U 3.1 U 3.9 3.1 U 3.1 U 3.1 U 3.1 U 3.2 U 3.3 U 3.4 R08-SN01 85.9 112.1 U 3.3 S.0 1.5	277. 28	03D-SAL	74.05	126.2	3.3	4.8	4.4	7.1
29 08D-SAL 61.68 122.9 2.3 U 4.0 2.8 2.1 30 08B-SAL 63.86 136.4 3.1 U 5.3 3.1 U 2.9 31-R 08B-SAL 90.86 115.6 3.6 U 5.6 3.6 U 6.4 BLANK 75.31 123.8 3.8 U 5.3 3.7 U 8.7 32 03A-SPA 62.55 121.0 2.1 U 2.9 2.1 U 1.9 33 05A-SPA 70.21 125.6 2.2 U 5.2 U 2.0 2.0 34 R08-SN01 85.92 112.1 1.6 U 3.3 5.0 1.5	227- BLK-4		67.67	133.7		3.9		10.2
30 08B-SAL 63.86 136.4 3.1 U 5.3 3.1 U 2.9 31-R 08B-SAL 90.86 115.6 3.6 U 5.6 3.6 U 6.4 3.5 LANK 75.31 123.8 3.8 U 5.3 3.7 U 8.7 3.2 03A-SPA 62.55 121.0 2.1 U 2.9 2.1 U 1.9 3.3 05A-SPA 70.21 125.6 2.2 U 5.2 U 2.0 3.0 3.3 5.0 1.5	277- 29	08D-SAL	61.68	122.9		4.0	2.8	2.1
31-R 08B-SAL 90.86 115.6 3.6 U 5.6 3.6 U 6.4 BLANK 75.31 123.8 3.8 U 5.3 3.7 U 8.7 3.2 03A-SPA 62.55 121.0 2.1 U 2.9 2.1 U 1.9 3.3 05A-SPA 70.21 125.6 2.2 U 5.2 2.2 U 2.0 3.3 5.0 1.5	277- 30	08B-SAL	63.86	136.4		5.3		
BLANK 75.31 123.8 3.8 U 5.3 3.7 U 8.7 3.2 U 5.3 3.7 U 8.7 3.2 U 5.3 3.7 U 1.9 1.9 1.9 3.3 05A-SPA 70.21 125.6 2.2 U 5.2 2.2 U 2.0 3.4 R08-SN01 85.92 112.1 1.6 U 3.3 5.0 1.5	C	08B-SAL	90.86	115.6		5.6		6.4
32 03A-SPA 62.55 121.0 2.1U 2.9 2.1U 1.9 33 05A-SPA 70.21 125.6 2.2U 5.2 2.2U 2.0 34 R08-SN01 85.92 112.1 1.6 U 3.3 5.0 1.5	$\mathbf{\omega}$		75.31	123.8	3.8 U	5.3		8.7
33 05A-SPA 70.21 125.6 2.2 U 5.2 2.2 U 34 R08-SN01 85.92 112.1 1.6 U 3.3 5.0	277- 32	03A-SPA	62.55	121.0	2.1 U	2.9		
34 R08-SN01 85.92 112.1 1.6 U 3.3 5.0	277- 33	05A.SPA	70.21	125.6	2.2 U	5.2		2.0 U
	277.34	R08-SN01	85.92	112.1	1.6 U	3.3	5.0	1.5 U

BUTYLTINS IN SEDIMENTS, PLANTS & TISSUE Sponsor: SIMMER (McGUFFIE)

(Concentrations in ug/kg dry weight)

MSL Code	Sponsor Code	Tripentyl % Surrogate	Pentylbutyl % Internal	Tetra	Tributyi	Dibutyl	Monobutyl
277- 34 DUP	R08-SN01	80.00	128.8	1.4 U		4.2	1.7
277-35	R08-SN02	80.15	134.2	0.6 U	٠.	6.0	1.6
277.36	R13-CBR1	71.18	132.5	14.6	40.7	30.1	11.8
277-37	R01-MOR1	69.60	122.2	3.9 U		9.3	7.8
277- 38	RO1-MOR2	131.20	52.3	5.0 U	38.3	5.0 Ù	4.6 U
U Indicates not	U Indicates not detected at detection limit shown	tion limit shown		-			
MATRIX SPIKE RESULTS	RESULTS						
277-1-C SPIKE		69.36	144.4	168.0	219.6	243.0	37.6
Percent Recovery	Чесо vе <i>r</i> y			35%	46%	51%	7.7%
277-5-C SPIKE	•	67.29	142.5	149.6	184.6	31.5	123.4
Percent Recovery	Чесо и елу			34%	41%	2	28%
277-8-C SPIKE		82.71	125.4	138.4	203.7	260.7	44.8
Percent Recovery	Recovery .			35%	51%	% 99	11%
227-BLANK SPIKE	A E	76.42	177.2	294.4	301.6	327.5	221.5
Percent Recovery	Зесоиелу			28%	29%	, 65%	43%
277-36 SPIKE		73.86	128.1	1004.6	1153.7	841.8	63.5
Percent Recovery	Зесочелу			%09	% 69	20%	4%

METALS IN SEDIMENTS, PLANTS & TISSUE Sponsor: SIMMER (McGUFFIE)

(concentrations in mg/kg dry weight)

MSL Code Ro	Rep Sponsor ID	Rep	Ag	As	8	(a)	8	모	Z	(a)	(q)	4
			¥	英	¥¥	AAXRF	Š	CVAA	支	AAXRF	AVXRF	Š
SEDIMENT												
-		REP 1	0.448	19.3	0.28	183.0	68.5	0.383	107.7	85 85	0.41	1400
277. 1 REP 2		REP 2	0.446	20.7	0.28	168.0	72.4	0.394	106.6	84.6	66.0	145.5
277. 2	SED07.CM		0.355	10.6	0.33	195.0	67.5	0.469	119.8	33.8	0.33	157.5
	SED01-MR		1.418	23.7	0.33	174.0	71.6	0.515	102.0	36.3	0.33	137.2
•	SED05-CM		0.660	14.4	0.26	179.0	67.6	0.419	125.9	34.1	0.25	1584
277. 5	SED10-CB		0.359	17.2	0.56	. 126.0	67.9	0.321	93.3	47.8	0.91	135.0
277. 6	SED13.CF		0.234	. 5.36	0.55	110.0	24.2	0.059	32.2	14.0	0.1411	161.7
	SED08-CM		0.023	5.29	0.41	224.0	35.9	0.074	72.2	20.9	0 14 1	288
	SED14-BR		0.206	16.9	0.36	193.0	77.3	0.362	122.1	32.5	0.25	164.7
277. 9	SED11-CB		0.350	15.3	0.22	181.0	50.3	0.283	83.3	13.7	0.10	80.8
277.10	SED04.CM		0.143	13.4	0.31	214.0	72.6	0.439	135.5	35.7	2.5	0.60
277.11	SED02.CM		0.372	18.5	0.32	219.0	906	0.469	125.4	36 A	 	7.00
77.1	SED03.CM		0.479	18.2	0.41	179.0	70.1	0,166	145.2	33.0	0.50	156.1
277.13	SEDWR09-CM		0.194	6.6	0.22	256.0	28.6	0.164	7.27	4 0.0	0.42	77.0
									i	4 5	-	0.
s.												
4			0.003 U			0.4	9.7	0.024	1.7 U	0.23	1.10 U	27.3
*			0.003 U		U 0.13	4.0	9.5	0.023	2.33	0.34	1.10 []	6 66
			0.003	0.92 L		3.6	10.1	0.034	3.78	66.0	0 70 11	30.8 80.8
2			•	•	•	3.9	•		•	1 27 •	•)))
277.16	08C-SAL		0.007	0.85 U		0.4	8.7	0.030	1.48	0.92	0.6611	. ט
277.17	04C-SAL		0.007	1.0 U		5.9	19.1	0.038	6 2 9	1 42	2 67 0	50.0 7 4
277.18	03C-SAL		0.003 U	1.0	0.05	1.8	8.0	0.016	3.31	9 0	0.67.0	45.7 26.6
277.19	11C-SCI		0.003 U	0.79 U		0.7	15.3	0.018	4.47	0.49	2 2 2 0	98 7
277.20	11A-SCI		0.003 U	0.87	0.17	2.7	31.1	0.050	6.70	0.87	0.62	000
277.21	118-SCI		0.003 U	O.89 U		4.0	17.4	0.044	9.39	1.03	0.65.11	133.0
~ (03B·SPA		0.135	1.04	0.12	7.7	13.9	0.025	9.29	1.84	0.64 U	9.6
277.23	04A-SPA		0.107	1.82	0.07	2.5	8.9	0.014	2.05	0.60	0.68 U	6.09
277.24	14A-SCI		0.034	0.79 U	0.08	3.3	7.7	0.038	3.47	1.18	0.58 U	48.4
2///25	14D-SAL		600.0	0.95 U	0.07	1.7	11.4	0.019	1.85	0.71	0.71 U	29.8
277.26	02C-SAL		0.003			1.8	10.8	0.019	2.47	0.61	2.20 U	40.0
2	05D-SAL		0.014			1.4	11.5	0.018	4.49	0.86	0.66 U	44.3
277.28	03D-SAL		600.0			5.6	12.0	0.021	5.27	0,93	0.64 11	25. B
277.29	08D-SAL		0.003			7 .0	69. 69.	0.025	0.93 U	0.38	0.65 U	36.36
_	08B-SAL		0.003	O.99		9 0	8 0.	0.018	1.47	0.49	0.77 U	57.4
277.31	11D.SCI		0.005	_		6 .	13.6	0.028	5.81	0.76	0.61 U	59.3
77	03A-SPA		0.217	1.27	90.0	7.2	13.7	0.022	8.76	1.39	0 63 11	0.86
277.33	05A.SPA		0.165	0.99	0.08	es S	7.	0.027	9.1	2.04	0.65 U	65.5
												, ,

METALS IN SEDIMENTS, PLANTS & TISSUE Sponsor: SIMMER (McGUFFIE)

(concentrations in mg/kg dry weight)

							(a)				(a)	(q)	
MSI Code Rep	Ren	Sponsor ID Rep	Rep	Ag	¥8	8	Ö	8	Ŧ	Z	P.	89	ភ
	L		-	VV	奘	AA	AAXRE	APF.	CVAA	XY.	AAXRF	AAXRF	奘
TISSUES													
277.34		R08-SN01		0.347	11.62	1.03		93.6	0.180	10.2	1.15	1.33	401.0
277.34		BOB-SNO1		0.360	9.22	1.03		74.3	0.172	8.5	1.43	1.04	309.0
277.35		BOB.SNO2		0.121	2.5	0.34		23.5	0.055	4.5	0.82	1.47	131.4
277.36		R13-C8R1		1.03	10.79	3,34		164.1	0.469	5.78	1.89	3.98	273.0
277.37		BO1.MOR1		0.819	8.76	3.53		23.1	0.398	7.74	1.71	4.19	71.7
277.38		R01-MOR2		0.914	8.93	3,45	3.3	20.5	0.304	5.33	1.39	3.52	71.1
Alank				0.019	××	0.01 U		A/N	0.001 U	A/S	A/A	0.14 U	N/A
Black				0.007	A/N	0.01 U		N/A	0.001 U	N/A	0.17 U	0.14 U	N/A

U indicates not detected at detection limit shown N/A indicates not applicable

PESTICIDES IN SED., PLANT & TISSUE & TISSUE Sponsor: SHAIMER (McGUFFIE)

THE (CONCENTRATIONS IN UGIKG WET WEIGHT)

		*	*		Alpha-	Bela-	Defta-	Gamma -	Chlor-	4.4.	4.4.	4.4.	
		MOISI.	Moisi.	Aldrin	B+C	2E	arc Bro	BFC	dane	000	DODE	DODT	Dieldrin
SEDIMENT													
SEDIMENT METHOD BLANK	BLANK	N/N	Y/	200	_	C	•	•	•	1			
277. 1	SED09-CB	09	09	3.0) = 0 = 0	0.0	9 6	0.0	3.00	0	3.0 U	0	0
277. 2	SED07-CM	55	. KG	9) C) C	> <	> (9 (0	3.6	0	0
277. 3	SED01-MR	47	47) = 0 (0)) C)	5 C	3 0	0 (0	3.0 U	0	0
277. 4		45	4.5	, c) c	5 0	2 (0 (0	3.0 U	0	0
		72	7.5	, c) C)	5	9 1	0 (0	3.0 U	0	0
277. 6		93	. C	9 0		5 C	5 6	9	0 1	0	5.0 ∪	0	0
) ec) e) C		3	9	9	0	0	3.0 U	0	\sim
		36	70) C	> c	-	5 6	0	0	0	3.0 U	0	\circ
				> 0			-	a	0	0	3.0 U	0	$\overline{}$
-		7 4	V V	> c	٠,	2	0 1	0	0	\sim	3.0 U	0	\sim
_			* 6	> (٠,	~	0		0	0	3.0 ∪	0	\sim
		n r	7) P	5	_	_	0	\sim	0	\sim	3.0 U	0	_
277 - 12	Z	\ c	/0	0	_	_	_	$\overline{}$	$\overline{}$	_	3.0 U		_
-		6	6	0	_	\sim	_	~	3.0 U	3.0 U	3.0 U	3.0 U	3.00
							•						
PLANTS													
PLANT METHOD BLANK	NK	4	X/X	1100	_	_	•	•	•				
277. 14	OBA-SAL	6	9	2) C) (, ,	, (•	0	v	0	0
) e	9 6	2 0	2	Э (9 (0	O	0	0	0	0
	_	9 6	h 4	0.0	9	Э,	0	0	0	0	0	0	0
277. 17		0 0	۵ c	0.0	9	9	О.	0	0	0	0	0	0
) *)	2.00	9	0	0	0	0	0	0	0	0
	110.00	• 6	e (0.0	9	0	0	0	0	0	0	0	0
٠ ،	100 A11	9 6) f	0.00	9 (0	0	0	0	0	0	0	0
	118 SCI	~ v	~ 4 80 6) i	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	200	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
	038 SPA	2 6) K	0.00	,	20	0 (0	0	0	\mathbf{c}		
	04A.SPA	87	. 6	200		5 C	o (0 (\circ	\circ	\sim		0
	14A.SCI	7.7	7.4	200	•	2 0) e	0	0	\circ	\sim	\sim	
	14D.SAL		. e	202) c			0	_	$\overline{}$	_	\sim
277- 26	O2C SAL	. 40		200		o		~ (_	$\overline{}$	\sim	$\overline{}$	\sim
	05D-SAL		87	202				~ (_	\sim	\sim	_	\sim
277. 28	03D SAL	. ea	· 60	0.0			•	·	~ 4	~	_	_	_
	08D-SAL	9.7	87	200		•	•	٠.	~	~	_	_	$\overline{}$
	OBB.SAL	. 45	. 45	200			•	~ .	_	_	_	_	$\overline{}$
	110.501) e		2 2		٠.		_	_	_	_	_	_
	03A.SPA) (d) (d	9 6	0.0	٠,		_	_	_	_	_	_
7.7	OSA CDA					٠.	-	_	_	_	_	_	_
,	£10.000	*	+		_	_	_	_	_	_	_	_	2.0 U

PESTICIDES IN SED., PLANT & TISSUE Sponsor: SIMMER (McGUFFIE)

PERCENT	Toxa- SHRROGATE
٠,	Methoxv-
	Heptachlor
	Hepta-
::	Endrin
	Endosullan
	Endo-
IGHT)	*
(CONCENTRATIONS IN UG/KG WET WE	

(CONCENTRATIONS IN UG/KG WET WEIGHT)	UG/KG WET WEIG									:		•.	-	PEHCENI RECOVERY	
		*	Endo-	Endo-	Endosulfan			Endrin	Hepta-		Heptachlor	Methoxy-	Toxa-	SURROGATE	_
		Moist.	sullan I	ınılan	Sulfate	Endrin		Aldehyde	chlor		Epoxide	chlor	phene	DBC	
SEDIMENT															
SEDIMENT METHOD BLANK	AX	Y/X	3.0 U		0		>			-			200	11	
277. 1	SED09-CB	09	3.0 U		0		-	3.0		-		30			
277. 2	SED07.CM	55	3.0 U		0		>			-		3.0	200	11	
277. 3	SED01.MR	47	3.0 U		0		>			-		3.0			
	SED05.CM	45		3.0 U	3.0 U	3.0	-	3.0	3.0	-					
	SED10-CB	72	5.0 U		0		-			=		6		=	
	SED13.CF	33			0		-			=		0 6	200		
	SED08-CM	38			0		>			>		30	202	שכ	
	SED14-BR	34	3.0 U		0		-			-		3.0		na	
	SED11.CB	32	3.0 U	3.0 U	. 3.0 U		-			=		0		200	
277. 10	SED04.CM	54			0		-			>		30			
	SED02.CM	4			0		-		3.0	-		3.0			
77. 12	SED03 CM	24			3.0 U	3.0	>	3.0 U	3.0	>		3.0) e	
	SEDWR09.CM	6	3.0 U	3.0 U	3.0 U	3.0)		3.0	-	3.0 (3.0	200	U 92	
								•				i			
PLANTS														•	
PLANT METHOD BLANK		Y/X	2.0 U	0	2.0 U		-	2.0 U	2.0	=	2.0	0	100	1	
	08A-SAL	83	2.0 U	0			-		N	=		, c	•		
15	14C SAL	83		0	0		-		8	-		0 0	_	• "	
. 16	OBC-SAL	98	2.0 U	0	0		-		N	-				-	
17	04C.SAL	06		0	0		-		N	-	0	2 0 2			
8	03C-SAL	84	2.0 U	2.0 U	2.0 U	2.0	-	2.0 U	2.0	· ¬	2.0 U		-	77.	
- 19	11C-SCI	90	2.0 U	0	0		_		κi	-	٥	2.0			
	11A.SCI	87	2.0 €	0	0		-		Si	-	0	2.0		ō	
. 21	118-SCI	9 6	2.0 C	0	0		> :		S,	-	0	2.0	_	Ξ	
N 1	USB SPA	/ B	2.0 U	0	0		-		તાં	-	0	2.0	100	-	
. 23	04A-SPA	60 2	2.0 0	0	2.0 U		- :		αi	-	0	2.0	100		
3 (14A.SCI	* ;	2.00	0	0		-		αi	-	0	2.0	100	U 32	
٠ د د	140-SAL	E 6	2.00	0			> :		αi	-	_	2.0	-	10	
9 1	OZC-SAL SE SE	7 1	2.0 0	5	0		> :		€i	-	_	2.0	100	80	
27	OSD-SAL	/ B	2.00	0	0		⊃:		αi	-	0	2.0	-	12	
9 7	UJU-SAL	C 1	20.0	9	0	9	> :		αi	>	_	5.0	100	U 176	
53	DBD-SAL	87	2.0 U		0		-		~	-	0	2.0	100	138	
် ဗိ	08B SAL		2.0 U		0		> :		αi	-	2.0 U		100	15	
7. 31	110-SCI	88	2.0 C	2.0 €	0	50	>	2.0 □	2.0	>		2.0	100		
77. 32	D3A-SPA	96	0	2.0 C	0		>	2.0 C	2.0	>	2.0 U		100	· cc	
277. 33 0	05A.SPA	84	0		0	0	>	2.0 C	2.0	=		2.0 U	100	U 75	

PESTICIDES IN SED., PLANT & TISSUE & TISSUE Sponsor: SIMMER (McGUFFIE)

	_												
		*	*		Alpha-	Beta-	Delta-	Gamma-	Chlor-	4.4-	4.4	4.4.	
		Moist.	Moist.	Aldrin	BHC	BHC	BHC	BHC	dane	000	DOOE	DOOT	Dieldrin
TISSUE													
TISSUE METHOD BLANK		N/A	N/A	10 0	10 U	100	10 U	10 U	10 U	10 U	10 U	10 U	100
277- 34 RC	18-SN01	99	99	10 U	10 U	100	10 U	10 U	10 U	10 U	10 U	10 U	100
277- 34 RC	38-SN01	99	99	100	10 0	10 U	10 U	10 U	100	10 U	10 U	17 U	100
277- 35 RC	38-SN02	35	35	10 U	10 0	10 U	10 U	10 U	10 U	10 U	10 U	10 U	100
277- 36 R	113-CBR1	92	92	10 U	10 U	12 U	24 U	10 U	10 U	100	115 U	30 U	16
277- 37 RO	1-MOR1	85	85	10 U	10 U	10 U	10 U	10 U	10 U	100	10 U	10 U	10 U
277- 38 RO	R01-MOR2	88	80	10 U	10 U	10 0	10 U	100	10 U	10 U	10 U	10 U	10 U

U indicates not detected at detection limits show limits shown

PESTICIDES IN SED., PLANT & TISSUE Sponsor: SIMMER (McGUFFIE)

PERCENT RECOVERY	SURROGATE	DBC
	Toxa-	phene
	Methoxy-	chlor
	Heptachlor	Epoxide
	Hepta-	chlor
	Endrin	Aldehyde
		Endrin
	Endosulfan	Sulfate
	Endo-	ulfan 1
	Endo-	sullan 1
GHT)	%	Moist.
(CONCENTRATIONS IN UGIKG WET WEIGHT)		
(CONCE		

	67	111	157	110	119	130	70
		500 U				200 U	200 U
						10 U	
						10 U	
						10 U	
						10 U	
						10 U	
	10 U					10 U	
	10 C	10 C	10 U	10 U	10 U	10 U	10 U
	10 C	10 U	10 U				
	K/N	99	99	35	92	82	88
	홋	R08-SN01	R08-SN01	RO8-SN02	R13-CBR1	37 R01-MOR1	R01-MOR2
	OBLAN	34	34	35	36	37	38
TISSUE	TISSUE METHO!	277-	277-	277.	277-	277.	277- 38 R0

U indicates not detected at detection limits sho

PCBs IN SED., PLANT & TISSUE Sponsor: SIMMER (McGUFFIE)

(CONCENTRATION	NI SNO	(CONCENTRATIONS IN UGIKG WET WEIGHT)	SHT									PERCENT	₽
-			Moist.	Arocior- 1016	Aroclor- 1221	Aroclor- 1232	Aroclor- 1242	Aroclor- 1248	Aroclor-		Aroclor-	SURROGATE	GATE
SEDIMENT													,
SEDIMENT METHOD BLANK	100 B	LANK	K/N		30	30	6	c	•		•		ļ
277-	-	SED09.CB	09	30 0	30	30 00			2 0	> =	0 0	> :	37
277.	~	SED07-CM	55		30	30	0 6		, .		5 6	> :	27
277.	ო	SED01-MR	47		30	000	0 6	9 6	, •		.	> :	63
277-	4	SED05-CM	45		06	000		9 6	- '		S (.	73
277.	ß	SED10-CB	72		50.05	9 4	2	2 6	.,		_	- :	o
277.	9	SED13-CF	8		9 6		2	0 0	.,		<u> </u>	-	32
277.	7	SED08.CM	38		0 6	9 6	9 6		., .	> :	_	5 :	80
277.	60	SED14-BR	34		90	9 6	9 6	9 6	,,,			- :	59
277-	Ø	SED11-CB	32		e e	0 6	8 6	9 6				.	87
277.	10	SED04.CM	54		0 6	9 6	2	9 6	,	_		_	O
277-	Ξ	SED02.CM	4		000	6	9 6	9 6	2 (_	- ,	121
277-	12	SED03-CM	57		9 6	9 6	9 6	000			_	_	83
277.		SEDWR09-CM	6		2 6	9 6	9	000	21		_	_	87
					•	3	9	,			_		92
PI AUTS			r										
PLANT METHOD BLANK	S S S	v	A/A		-	•		;		:			
277.	14	ORA.SAI	0			0.0		20	20	-	20 U	_	63
277.	÷	140.541	, c			20		20	20	-	_	_	7.1
277.	9 4	OBC: SAL	n 4			20		20	20	_	_	_	132
277.		OAC.SAI	0 0			20		20	20	-	_	_	89
277.	- =	O4C.SAL) *	200	20 0	50 C	20 U	, 20 U	20	-	20 U	_	122
277.	9 6	410.9CI	* 6			20		20	20	-	_	_	=
_	. 0	11A.SCI) e			9 0		20	20	-	_	_	29
	21	118.SCI	. «			0 0		20	20	>	_	_	106
		03B-SPA) & 			9 6		20	20	-	_		113
		O4A.SPA	7.8	200		9 6		20	20	-	_		121
		14A-SCI	7.4			9 6		20	20	-	_		48
	-	14D.SAL	. 4			9 6		20	20	>	_		32
	Ĭ	O2C.SAL	. 4	2 5		0 6		20	20	-	_		103
		050.SAI	. 4			9 6		20	50	-	_		87
		03D-SAL	- v:			0 6		20	20	>	_		122
	_	DRD.SAL	7 8			9 6		20	20	-			176
		OBB.SAI	. 9	2 0	0 0 0	9 6		20	20	-			138
		700.000) e			2 6		20	50	⊃			154
		10.00	D (9 (20	-			79
	y (¥10.40	٠ م			20 O		50	20	-			7 8
277- 3	·	05A-SPA	8		20 C			50	20	=			10
)			· ·

PCBs IN SED., PLANT & TISSUE Sponsor: SIMMER (McGUFFIE)

CONCENTRATIONS IN UG/KG WET	T WEIGHT)	÷							PERCENT RECOVERY
	*	Aroclor-	Aroclor-	Aroclor-	Aroclor-	Aroctor-	Aroclor-	Aroclor-	SURROGATE
	Moist.	1016	1221	1232	1242	1248	1254	1260	DBC

		MOIST.	9101	1221	1232	1242	1248	1254	1260	280
	٠									
TISSUE										
TISSUE METHOD BLANK	NK	K/X	100 U	100 U	100 U	100 U	100 U	100 U	100 U	67
277. 34	H08-SN01	99	100 U	100 U	100 U	100 U	100 U	100 U	100 U	111
277. 34	34 R08-SN01	99	100 U	100 U	100 U	100 U	100 U	100 U	100 C	157
277. 35	RO8-SN02	35	100 U	100 U	100 U	100 U	100 U	100 U	100 U	110
277. 36	R13-CBR1	92	100 U	100 U	100 U	100 U	100 U	100 U	100 U	119
277. 37	R01-MOR1	85	100 U	100 U	130					
277. 38	R01-1:10R2	88	100 U	100 U	100 U	100 U	100 U	100 U	100 U	70

U indicates not detected at detection limits sho

PCB and Pesticide Matrix Spike Recoveries

Surrogate DBC	2	165% 129%	116%
Aroclor-	79%	189%	83%
1254	A		100%
Dieldrin	113% 88%	59% 50%	80%
Aldrin	61%	57%	107%
	62%	58%	83%
Sponsor	SED03-CM	05A-SPA	R13-CBR1
Codes	SED03-CM	05A-SPA	R13-CBR1
	5 2 2	33	36
Battelle	277.	277.	277-
Code	277.		277-

PCBs IN SED., PLANT & TISSUE Sponsor: SIMMER (McGUFFIE)

(CONCENTRATIONS IN UG/KG WET WEIGHT)	GHJ								PERCENT RECOVERY
*	*	Arocior-	Arocior-	Aroclor-	Aroclor-	Aroclor-	Aroclor-	Aroclor-	SURROGATE
	Moist.	1016	1221	1232	1242	1248	1254	1260	280

SSUE										
TISSUE METHOD BLANK		V/N	100 U	100 U	100 U	100 U	100 U	100 U	100 U	67
277. 34 R08-	-SN01	99	100 U	100	100 U	100 U	100 U	100 U	1001	11
277- 34 R08-	SN01	99	100	100 U	100 U		100 U	100 U	1001	157
277- 35 ROB.	SNOS	35	100 U	100 U	100 U			100	100	10
277- 36 R13	3-CBH1	92	100 U	100 U	100 U	6				
277- 37 R01-MOR1	MOR1	85	100 U	100 U	100 U	100 U	100 U	100 U	100 U	130
277- 38 R01-I	MOR2	88	100 U	100 U	100 U	70				

U indicates not detected at detection fimits sho

PAHS IN SEDIMENTS, PLANTS & TISSUE Sponsor: SIMMER (McGUFFIE)

			Oihong			o copie				
Battelle	Sponsor		(a.h)-	Fluor		1030	2. Mathyl.	Naph.	Phonon	
Codo	Code	% Molst.	anthracene	anthene	Fluorene	Pyrene	Naphthene	thalene	threne	Pyrene
SEDIMENT										
277. 1	SED09.CB	%09	14	74	101	7	06	6	ć	Ġ
277. 2	SED07.CM	55%	5	120	10 0	87	2 6	9 0		
277. 3	SED01-MR	47%	6	190		. 6	30	9 6		0.40
277. 4	SED05.CM	45%	10 U	10 U	10 U	10 U	15	9 (6	101	101
277- 5	SED10-CB	72%	30	260		100	48	6		0
277. 6	SED13-CF	33%	. 10 U	49	10 U	4-		35	000	46
277. 7	SED08.CM	38%	10 U	18		=		20		
277. 8	SED14-BR	34%		28	-	17	0	9 50	· "	
277. 9	SED11.CB	32%	10 U	10 U		10 U	-	20 U	1001	101
277. 10	SED04.CM	54%	=	110		77	ĸ	50		· C
277- 11	SED02.CM	49%	10	94		59		53	9.00	120
277- 12	SED03-CM	27%	100	54	10 U	43	35	64	25	72
277. 13	SEDWR09-CM	19%	69	490	72	320	20	37	460	630
TEAUTS										
277. 14	08A-SAL .	%68	10 U	10 U	10 U	10 U	30	0	4	-
277. 15	14C-SAL	89%	10 0	100	10 0	10 U	35	26	1.	200
277. 16	08C-SAL	86%	100		10 U	10 U	25	89	50	101
277- 17	04C-SAL	% 06	10 U	10 U			25	73		
277. 18	03C-SAL	84%	10 U			10 U	20 U	50 U	10 0	
277. 19	11C-SCI	% 06	10 U		10 U		0	0		
277. 20	11A-SCI	87%		100	10 U		24	60	18	
277. 21	11B-SCI	% 98					27	76	18	
277. 22	03B·SPA	87%		10 U	10 U	10 U	29		14	10 0
277. 23	04A.SPA	87%					20 U		10 U	10 U
277. 24	14A-SCI	74%	0.00		10 U		20 U	0	10 U	
	14D-SAL	81% .:		0 0 0				61	16	10 U
	02C-SAL	84%						59	22	10 0
	05D-SAL	97%					37	120	17	10 U
	03D-SAL	85%			10 C			83	15	
277. 29	08D-SAL	87%	100			10 U	28	83	15	
	08B.SAL	86%	10 C) 0 1	10 C			9	12	100
	11D-SCI	88%	10 C				52	62	4	
277. 32	03A.SPA	86%	10 0			10 U	24	68	-	
277. 33	05A-SPA	84%	10 U	10 C	10 U	10 U	25	68	17	

PAHS IN SEDIMENTS, PLANTS & TISSUE Sponsor: SIMMER (McGUFFIE)

						Bonzolal	Benzolbi	Benzolki		Renzo.	
Battelle	Sponsor		Acenaph-	Acenaph-	Anthra-	Anthra-	Fluor-	Fluor-	Benzo[a]	(j,h,i)-	
BOOS	0000	% MOIST.	thene	thylene	cene	cene	anthene	anthene	pyrene	perylene	Chrysene
SEDIMENT											
277. 1	SED09-CB	%09	100	10 U	17	56	60	67	69	ď	76
277- 2	SED07.CM	22%	100	10 U	16	67		72	86	100	2.2
277- 3	SED01-MR	47%	12	15	38	100	96	82	130	110	. 00
277. 4	SED05-CM	45%	10 U	10 U	10 U	10 U	10 U	10 U	100	100	100
277- 5	SED10-CB	72%	6+	120	97	150	211	150	130	110	300
277. 6	SED13.CF	33%		10 U	10 U	59	- 8	20	22		22
277. 7	SED08-CM	38%	10 U	10 U	10 U	10 U	15	-	-
277. 8	SED14.BR	34%	10 U	10 U	10 U	=	18	13	. 4		. 4
277. 9	SED11-CB	32%	100	10 U		10 U	100	100	100	101	100
277- 10	SED04.CM	54%	10 U	10 U	15	47	67	20	80		2 6
277- 11	SED02-CM	49%	10 U	10 U	15	41	28	4	9 6		, r
277. 12	SED03.CM	21%	100	10 U	10 U	22	40	26) 6 () ()		. 60
277- 13	SEDWR09-CM	19%	27	98	230	290	250	250	410	350	270
PLANTS											
277- 14	08A-SAL	89%	10 U	100	10 U	10 0	10.01	101	-	-	-
277. 15	14C-SAL	89%	10 U	10 U	100	100	100	100		9 5	
277- 16	08C-SAL	%98	10 U	10 U	100			100			
277- 17	04C-SAL	. %06	10 U	10 U	10 U	10 U			700		
277. 18	03C-SAL	84%	10 U	10 U	10 U	10 U					
277- 19	11C-SCI	%06	10 U	100	100	10 U	100	10 0			
277. 20	11A-SCI	87%		10 U	10 U	10 U	10 U	10 U			
277. 21	11B-SCI	%98					10 0	10 U			
	03B·SPA	87%			10 U		10 U	10 U	10 U	100	
	04A-SPA	87%						10 U	100	10 U	
	14A-SCI	74%		10 U	10 C			10 U	10 U	10 U	
	14D-SAL	81%					10 U	10 0	10 U	10 U	
	02C-SAL	84%	100	10 U			10 U	10 U	10 U	10 0	
	05D-SAL	87%					10 U	10 U			10 01
	03D-SAL	85%				10 U		10 U			
	08D-SAL	87%				10 0	10 U	10 U			
277. 30	08B-SAL	%98	100	10 C		10 U	10 U	10 U		100	
277. 31	11D.SCI	88%				100	10 0	100			-
	03A-SPA	%98	10 U			10 U	10 U				
277- 33	05A-SPA	84%	10 U	10 U	100	10 U	10 U				

PAHS IN SEDIMENTS, PLANTS & TISSUE Sponsor: SIMMER (McGUFFIE)

מפונכבוווע	יייייייייייייייייייייייייייייייייייייי	. (ILO:									
						Benzolal	Benzolbi	Benzofk		Benzo-	
Battelle	Sponsor		Acenaph-	Acenaph-	Anthra-	Anthra-	Fluor-	Fluor-	Benzo[a]	(g,h,l)-	
Code	Code	% Moist.	thene	thylene	cene	cene	anthene	anthene	pyrene	perylene	Chrysene
1.00 H											
3226											
277. 34		%99	10 U	10 U	•	·	10 U	10 U	10 U	10 U	10 U
277-34 DUP		%99	10 U	10 U	•	·	10 U	100	10 U	10 U	10 U
277- 35		35%	100	10 U	•	·	10 U	10 U	10 U	10 U	10 U
277. 36		95%	10 U	10 U	•	·	10 U	10 U	10 U	10 U	10 U
277. 37		85%	10 U	10 U	•-	·	10 U	10 U	10 U	10 U	10 U
277. 38	R01-MOR2	88%	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BLANK		N/A	10 U	10 U	_	·	100	10 U	10 U	10 U	10 U
BLANK		N/A	10 U	10 U	_	•	100	10 U	10 0	10 U	10 U

U indicates not detected at detection limit shown

PAHS IN SEDIMENTS, PLANTS & TISSUE Sponsor: SIMMER (McGUFFIE)

Battelle Sponsor (a,h)- (a,h)- Fluor- (a,	CONCENTRAL	CONCENTRATIONS IN UG/RG WEI WEIGHT	WEIGHI								
ROB-SNO1 66% 10 U	Battelle Code	Sponsor Code	% Molst.	Dibenzo- (a.h)- anthracene	Fluor- anthene	Fluorene	Indeno- 1,2,3- Pyrene	2-Methyl- Naphthene	Naph- thalene	Phenan- threne	Pyrene
ROB-SNO1 66% 10 U	子いない丁					•					
ROB-SN01 66% 10 U	277- 34		66%	10 U	10 U	·	10 0		60 U	•	101
ROB-SN02 35% 10 U 11 10 U	277-34 DUP		%99	10 0	10 U		10 t		009	·	0 0
R13-CBR1 92% 10 U	277. 35		35%	10 U	-		10 t		0 0 O	·	10 C
R01-MOR1 85% 10 U 10 U 10 U 10 U 37 R01-MOR2 88% 10 U 10 U 10 U 14 BLANK N/A 10 U 10 U 10 U 10 U BLANK N/A 10 U 10 U 10 U 10 U	277. 36		95%	10 0	10 U		10 U		220	·	100
R01-MOR2 88% 10U 10U 10U 10U 30U 61 14 BLANK N/A 10U 10U 10U 10U 50U 50U 10U BLANK N/A 10U 10U 10U 10U 30U 60U 10U	277- 37		82%	10 U	10 U	•	10 U		120	••	26.5
BLANK N/A 10 U 10 U 10 U 10 COU 50 U 10 U BLANK N/A 10 U 10 U 10 U 10 U 10 U	277- 38		88%	10 U	10 U	·	10 U		61		100
BLANK N/A 10U 10U 10U 10U 30U 60U 10U	BLANK		4 /2	10 U	10 U	•	10 U		50 U	•	10 01
	BLANK		N/A	10 U	10 U		10 U		09 n	·	10 U

U indicates not detected at detection limit shown

Form Approved REPORT DOCUMENTATION PAGE OMB No. 0704-0188 Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arington, VA 22202-time of Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arington, VA 22202-time of Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arington, VA 22202-time of Department of Defense of Defense of Department of Defense of Defense of Department of Defense of Defense of Defense of Department of Defense of Def 3. DATES COVERED (From - To) 2. REPORT TYPE 1. REPORT DATE (DD-MM-YYYY) Final Report November 2000 5a. CONTRACT NUMBER 4. TITLE AND SUBTITLE Field Survey of Contaminant Concentrations in Existing Wetlands in the San Francisco Bay Area 5b. GRANT NUMBER 5c. PROGRAM ELEMENT NUMBER 5d. PROJECT NUMBER 6. AUTHOR(S) C. R. Lee, D. L. Brandon, J. W. Simmers, H. E. Tatem, R. A. Price, and S. P. Miner 5e. TASK NUMBER 5f. WORK UNIT NUMBER 8. PERFORMING ORGANIZATION 7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) REPORT NUMBER U.S. Army Engineer Research and Development Center ERDC/EL SR-00-15 Environmental Laboratory 3909 Halls Ferry Road Vicksburg, MS 39180-6199 10. SPONSOR/MONITOR'S ACRONYM(S) 9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) U.S. Army Engineer District, San Francisco 333 Market St. 11. SPONSOR/MONITOR'S REPORT San Francisco, CA 94105-2197 NUMBER(S) 12. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution is unlimited. 13. SUPPLEMENTARY NOTES 14. ABSTRACT The importance of wetlands to the productivity of estuaries has been realized in the San Francisco Bay Area. A heightened public interest has emerged to restore wetland acreage that has dwindled away over the past 50 years. Dredged material was thought to be of potential value in wetland creation or restoration. This report presents the results of a field survey of existing wetland sites in the San Francisco Bay Area. Dominant plants, of existing wetland sites in the San Francisco Bay Area. Dominant plants, animals (where present) and wetland soil from selected marine and estuarine wetlands were sampled and analyzed for contaminants. These data will be used to establish a wetland reference database. Sediment biological and chemical test results concentrations will be compared to the reference database to evaluate its potential use in wetland creation. 15. SUBJECT TERMS Wetlands **PCBs** Heavy models Animal tissue concentrations Plant tissue concentrations

17. LIMITATION

OF ABSTRACT

PAHs

c. THIS PAGE

UNCLASSIFIED

Field survey

a. REPORT

UNCLASSIFIED

16. SECURITY CLASSIFICATION OF:

b. ABSTRACT

19a. NAME OF RESPONSIBLE PERSON

19b. TELEPHONE NUMBER (include area

18. NUMBER

118

OF PAGES